The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. VII. No. 178 NOVEMBER 11, 1922 Prepaid Annual Subscription United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.

Editorial and General Offices*—8, *Bouverie St., London, E.C.4.
Telegrams: "Allangas, Fleet, London." Telephone: City 9852 (6 lines).

Chemical Preservatives in Food

THE older methods employed for preserving foodstuffs mainly involved the processes of drying, smoking, immersing in brine or dry salting, pickling in vinegar and preserving by means of sugar, while the more modern methods include sterilisation by heat and refrigeration. When properly carried out, no legitimate objection can be raised to any of these methods, although recent discoveries tend to show that certain foods are harmed as regard their vitamin content by the processes of drying and sterilisation. In addition to these methods, there must now be added the use of chemical preservatives, designed to check bacterial decomposition, and to conserve the food in a state fit for consumption. The employment of these substances (amongst which may be mentioned formaldehyde, boric acid and borax, salicylic and benzoic acids and their salts, sulphites and fluorides) is very prevalent, and largely on the increase; and the consumer is not often informed by the food manufacturer or vendor of the presence of such foreign additions. If these chemical preservatives are harmless, then, of course, there is no reason why their use should not continue unchecked. The point at issue, however, is whether or not these substances are harmful in the amounts usually added for food preservation.

Evidence is accumulating annually that certain of these preservatives are undesirable even in small quantities, and this is especially likely to be the case where preserved foods are ingested continuously for prolonged periods. All of us, for example, consume an appreciable quantity of boric acid daily. Our butter, margarine, ham, bacon, cream, and other foods are regularly dosed with this chemical. In many cases, no doubt, chemically preserved foods may be consumed with impunity for a long period, but some authorities are of opinion that much of the indefinite ill-health and malaise of our time may be laid at the door of the chemical preservative. So well has this been recognised that it is now illegal to add any chemical preservative whatever to milk, although it is not many years ago that persons engaged in the milk trade declared that without the use of preservatives their trade would be ruined. Further, formaldehyde has been definitely proved to be so deleterious in its action that its use as a food preservative is now never resorted to except by the ignorant. It is apparent to all who have studied the matter that the present Food Acts have more or less broken down so far as preservatives are concerned. They give no protection to the consumer, nor do they guide the careful manufacturer as to what his line of action should be. It is a national business to decide what should and what should not be allowed in the chemical preservation of food, and what amounts, if any, of chemical preservatives should be permitted. The ignorance of persons using chemical preservatives is frequently appalling; and since no declaration of the presence of a preservative is usually made, a vendor of certain classes of food may add a full dose of preservative without knowing that the manufacturer has already added a similar dose. Certain foods have been found to contain as much as 2 per cent. (140 grains per lb.) of a boron preservative. Restrictions should undoubtedly be placed upon the use of these substances, and in all cases a label declaring the kind and amount of preservative added should be affixed to the container.

The Departmental Committee on Preservatives in Foods made several recommendations in the form of restrictions deemed by them to be necessary where chemical preservatives were added to food, but although 21 years have passed since the report was issued, very little has been done. It is time that our country brought itself into line with the Colonies on this important question. The present position is highly injurious to the honest and careful manufacturer.

De-Inking of Printed Paper

ALTHOUGH the de-inking of paper used for magazines and some of the better class printers' paper has been practised for a long time, it has not been possible to apply the process to the recovery and re-use of ordinary newspaper because the strong alkaline solutions used in the process and the subsequent bleaching operation discolour any pulp containing ground wood. If weak solutions are used at a lower temperature so as not to discolour the pulp and still to dissolve the varnish from the ink and set free the carbon black, the carbon particles collect in masses which will not pass through the washing screen and remain mixed with the paper fibres. It is therefore necessary to provide some finely divided colloidal agent in the wash water which will help gather up the carbon and carry it away. Clays and talcs are sometimes used for this purpose, but the difficulty is to get them into a sufficiently fine condition unless they are previously heated with strong alkalis. The product is never comparable to that of the original paper, and therefore only finds use for quite inferior work.

In the above connection it is interesting to note that as the result of experiment in the Forest Products Laboratory at Madison, Wis., U.S.A., the natural mineral substance, "bentonite," has been found to be an extremely efficient agent for de-inking old newspapers. This substance has been described as a natural soap because of its considerable detergent properties. It is actually a very fine cream-coloured clay, which is said to occur in finer particles than any other known mineral substance, and it will go into colloidal suspension in water without the aid of alkalis. In the experimental tests with the material on old newspapers, bentonite was used with just sufficient alkali to loosen the ink without discolouring the paper. It was found that the small particles of the mineral could gather up the released carbon black and that the mixture could be easily carried through the ordinary washing screen. Even from the first, a sheet almost equal in quality to the original was obtained, and to-day, with ordinary paper-making equipment and a special washing screen, the process can be carried out on a commercial scale to produce a sheet which can compete in the open market with standards news sheet. It is claimed that from 2,500 lb. of old newspaper, 2,000 lb. can be recovered by this process.

The significance of this discovery may be judged from the statement that 325 tons of waste newspapers might economically be collected daily and converted into about 260 tons of clean paper in Chicago alone. This is estimated to effect a daily saving of the cut of 97 acres of 100-year-old spruce. For the whole of the United States the estimated saving is said to be equivalent to the cut on 275,000 acres of densely stocked spruce forests yearly. In view of the rapid depletion of available spruce areas and the slow growth of new forests, it is considered that the possibility of repeated use of the pulp used in the newspaper world is a matter of the utmost importance to the future of the newspaper industry. It is particularly important to Great Britain, as we depend almost entirely upon imported raw material for the manufacture of our newspaper requirements.

Chemists and "Chemors"

ALTHOUGH much has been said on the desirability of impressing upon the public the difference between chemists and pharmacists, we are not aware that anyone in this country has ever considered the manufacture of a word which shall be applied solely to chemists, thus leaving the present title for the use of the pharmacist. Nevertheless, this is what has been attempted in Canada, where it has been recommended that the word "Chemor" might well be applied to consulting, analytical or engineering chemists, to avoid the confusion arising from the idea that "chemist" is synonymous with "retail druggist." In the proposed new title "chem" apparently represents the science and "or" the agent, so that the meaning of the word "chemist" would still be retained. A number of alternative suggestions have been made, as a result of which such names as "chemic," "chemicor," and "chemistror" have been put forward, but the weight of opinion seems to be more in favour of adopting the word "chemor." One objection to this course would be that until or unless other English-speaking countries followed the Canadian example, the ambiguity complained of would remain in the language. Although this is not regarded as a serious objection, the desirability of securing the co-operation of British and American "chemors" beforehand has been suggested. The prospect of relinquishing the appellation which is rightfully theirs would not, we think, be welcomed by chemists in this country, but as some of the provincial legislation in Canada makes the pharmacist the only person legally defined as a chemist, the proposed change may be more favourably received over there. The sponsors of the new title apparently feared, as we do, that its sound might go against it, and accordingly suggested that chemists should make a practice of repeating the word aloud, possibly in the hope that some of its hidden beauty might thus be revealed. The proposal naturally gave rise to considerable discussion, and it has not yet transpired whether it will ultimately be adopted, either in its present or in some modified form. A more obvious way of avoiding the confusion which it is hoped to counter, would be for chemists so to enter into public life that there could be no possible doubt as to the precise nature of their calling. In spite of the adage regarding the nomenclature of roses we cannot imagine that this rather clumsy label will generally be applied to the industrial chemist any more than we can bring ourselves to ask for the "binette" when we want to use a slop-basin.

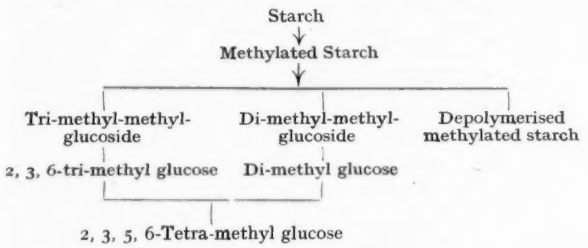
Researches in the Cellulose and Starch Groups

THE results of research in connection with the constitution of cellulose and starch as alluded to recently by Principal Irvine at the Hull meeting were of so interesting and important a nature that no excuse is needed for returning to them. It was shown that when the hexose glucose is fully methylated, and the product submitted to hydrolysis, a tetra-methyl glucose is obtained, and by determining the number and distribution of the methyl groups in such a compound, the structure of the parent substance can be deduced. In

attacking the problem of the constitution of cellulose, recent workers have shown that when cotton-cellulose is converted into the tri-acetate, and this compound is decomposed, more than 95 per cent. of the theoretical yield of methyl glucoside is obtained, proving that the molecule of this cellulose is composed entirely of glucose units—a point sometimes disputed by other workers. By alkylating the cellulose with methyl sulphate and sodium hydroxide Denham obtained a tri-methyl-(2, 3, 6-) glucose, and further work confirmed the conclusion that tri-methyl cellulose gives 2, 3, 6-tri-methyl glucose as the only product. The reactions are practically quantitative, considering the nature of the operations involved, and may be shown thus :—

Cellulose
↓
Tri-methyl-cellulose
↓
2, 3, 6-tri-methyl-methyl-glucoside
↓
2, 3, 6-tri-methyl-glucose

Thus proof is now forthcoming that all the glucose residues in *a*-cellulose are identical in structure, and that the formula best fitting the above reactions is the symmetrical tri-1, 5-anhydro-glucose, consisting of glucose residues coupled in a way not yet definitely determined. The starch molecule is found to consist entirely of glucose units, and three -OH groups are present for every six carbon atoms. The methylation method was also used in attacking the constitution of starch, and the following are the reactions obtained :—



The removal of tri-methyl-glucose and di-methyl-glucose is in the molecular ratio of 1 : 2, and is effected without alteration in the *composition* of the methylated starch surviving hydrolysis. The structure of starch, therefore, appears to be based on an anhydro-tri-saccharide in which two hexose residues are linked differently from the third. One pair must appear in any constitutional formula for starch in such a way that the essential structure of maltose is shown, for the primary reaction of starch is the production of this sugar by the action of diastase. The alternative formulæ favoured are four in number, $(C_6H_{10}O_5)3n$, and in each case starch is made to appear as derived entirely from the butylene-oxide form of glucose. This assumption has been proved experimentally to be correct. The researches have incidentally revealed that the attachment of nitrogen and phosphorus to the molecule of starch is not in the form of adventitious impurities, but that the fragments containing these elements are definitely polymerised to the starch unit. Other results tend to show that inulin is based on a tri-anhydro-γ-fructose.

These important papers are of more than mere academic interest, and mark a considerable advance in our knowledge, while the results obtained may at any time prove to be of great practical value. The work is being continued at St. Andrews University, and those responsible for it are to be congratulated on the success already achieved in a most difficult field of research.

Points from Our News Pages

A further American letter from Mr. F. E. Hamer (editor of THE CHEMICAL AGE) describes an interesting interview with Dr. C. H. Herty (p. 670).

Letters to the Editor are contributed by Mr. A. R. Tankard, F.I.C., Dr. F. Häusser, and Mr. O. F. C. Bromfield (p. 671).

Reviews are published of recent chemical books (p. 672).

The connection between fine chemicals and national prosperity is pointed out by Sir William J. Pope (p. 674).

According to our London Market Report, the home trade outlook is fairly healthy, and the general trend of prices is upwards (p. 685).

Quiet business during the week is recorded in our Scottish Market Report, with price reductions in bichromates of potash and soda (p. 687).

Books Received

CHEMICAL REACTIONS AND THEIR EQUATIONS. By Ingo W. D. Hackh. London : Chapman and Hall. Pp. 138. 6s.

THE THEORY OF ALLOTROPY. By A. Smits. London : Longmans, Green and Co. Pp. 397. 21s.

HOW TO FORM A COMPANY. By Herbert W. Jordan. London : Jordan and Sons, Ltd. Pp. 130. 1s. 6d.

SHALL THE STATE THROW AWAY THE KEYS ?—By the Association of British Chemical Manufacturers, London, W.1. Pp. 32.

The Calendar

Nov.		
13	West Yorkshire Metallurgical Society : "Aluminium" : Dr. Bramley. 7.30 p.m.	Technical College, Huddersfield.
13	University of Birmingham Chemical Society : "Asbestos and Some of its Products" : R. B. Tunstall	Birmingham.
14	Hull Chemical and Engineering Society : "Titanium White Pigments" : Noel Heaton. 7.30 p.m.	Hull Photographic Society's Rooms, Park Street.
14	Institute of Metals (Scottish Section). J. W. Donaldson. 7.30 p.m.	38, Elmbank Crescent, Glasgow.
14	Northern Polytechnic Institute Chemical Association : "The Reproduction of Laboratory Processes on a Large Scale" : E. V. Evans. 8 p.m.	Holloway, London, N.
15	Society of Glass Technology.	Sheffield.
16	The Chemical Society : Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, W.1.
17	West Cumberland Association of Chemists, Chemical and Metallurgical Engineers. Discussion : "Industrial Wastes and their Possibilities."	Workington.
17	The Society of Dyers and Colourists (Manchester Section). "Ionamines—A New Class of Dyestuffs for Acetate Silk." Professor A. G. Green and K. H. Saunders. 7 p.m.	College of Technology.

"Chemical Age" Letters from America.—II.

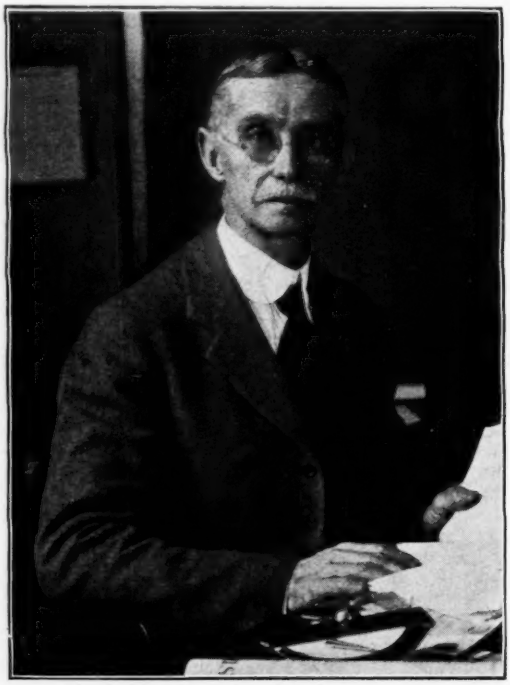
Reviving Trade—The Embargo—A Chat with Dr. Herty—Politics and Business

Delawanna, New Jersey.

As the result of a tour of some hundreds of miles, covering districts of a widely different character, and after an exchange of views concerning industrial prospects with manufacturers, merchants, works managers and engineers, State officials and private business men, and chemists varying from the most academical to the most commercial type, one gathers a large group of impressions from different angles, which it is very difficult to reduce to any definite and generally applicable conclusions. One fact, however, is clear. The chemical industry of the United States, in common with American industry generally, is reviving. All the testimony and all one's own observation leads to this conclusion. Not only is trade reviving; it is reviving more rapidly than in England, though the change started at about the same date. Moreover, strange as it may seem, things have definitely improved since the rejection of the Embargo. This is not because the policy of a tariff is considered better than that of an Embargo; nearly every one concerned in chemical industry regrets the loss of the Embargo. It simply means that for the business man, whether in chemistry or any other industry, anything is better than uncertainty. People now know where they are, and can enter into commitments some way ahead with a reasonable degree of security. On every side there is a feeling of real confidence.

* * *

It was a little curious to find that, while the high-brow class of people still tell you that America has no interest in Europe, how intensely interested all Americans are in the European situation, and especially in British political affairs. Their daily journals are as full of British politics as they are empty of American politics, and if you can tell them anything about Lloyd George you are regarded as a hero. To the American mind he is the one European personality who counts, and when I was able to tell them something about the man himself, and especially about the romance of his political career, it was received with wonder. In chemical circles I met with many inquiries as to how the British Parliament had kept faith with the dyestuffs and fine chemical industries, while the American Senate had let them down. The most obvious reply, of course, was that we were politically a little more honest than they, but I fear that did not quite go down.



Dr. C. H. Herty

It is too long a story to enter into now, but it may be interesting to give a short statement on the situation supplied to me by Dr. Herty, formerly editor of *The Journal of Industrial and Engineering Chemistry*, and now president of the Synthetic Organic Chemical Manufacturers' Association of the United States, with its headquarters in Madison Avenue, New York. Possibly the situation may have become a little clearer now than when I met Dr. Herty, which was on October 10—and unfortunately our mutual wish for a fuller discussion of matters was defeated by engagements which took us to different parts of the States—but what Dr. Herty told me was certainly interesting.

"I find it very difficult," he said, "to answer your question as to 'the position in reference to synthetic organic chemicals, as affected by the rejection of the embargo,' for two reasons—first, our Customs authorities have not yet made public their rulings as to just how the different features of the new tariff bill affecting synthetic organic chemicals will be administered; second, no one can tell yet what will be the German sales policy, as this has always been an arbitrary matter, and seemingly in no wise connected with usual economic principles.

"One thing is certain, namely, that the legislation as it finally emerged from the mill of tariff making, is very unsatisfactory and unscientific. The effort to apply a single *ad valorem* duty and a single specific duty, with American valuation added in the case of competitive products, is not suited to so complicated an industry where the prices of products vary between such wide extremes, and in an industry where efficiency in manufacture varies so widely in different lines. In the case of very low-priced products, there is seemingly more protection than is actually needed, while in the case of products selling from 90c. per pound upward, there is unquestioned under-protection.

"As the President has been denied the right to rectify the cases of under-protection by increasing rates, a right he has in all other industries, this channel of relief is closed. So, too, the many important synthetic organic medicinals of non-coal tar origin fall in the very shallow basket clause, which gives only 25 per cent. *ad valorem* duty, based on foreign valuation.

"The one hope of the situation is that so many prominent members of Congress are convinced of the inadequacies and inequalities of the present legislation, that the hope is justified that some remedial legislation may be passed later on which will correct the errors. Certain it is that, with the exception of a very limited number of members of Congress, there is a strong feeling among our representatives and senators that the synthetic organic chemical industry must be preserved as a national necessity.

"Personally I still remember, with sincerest endorsement, a statement made to me by Lord Moulton that 'the future peace of the world is more intimately bound up in the successful development of the dye industry in England and America than in any other measure now before the public."

* * * *

Generally I think Dr. Herty's views may be taken as typical of these held by all who desire to see America an independent nation in the matter of chemical production, but I hope to discuss this more fully in later contributions.

F. E. HAMER.

Sanitation and the Chemist

To the Editor of THE CHEMICAL AGE.

SIR,—It becomes daily more evident that the present age may be best characterised as the "Chemical Age"—and therefore your journal is not only well named, but it was timely in its advent. This being so, we should expect the chemist to be more to the fore than at any previous period of our history. It is well to take stock occasionally and to ask ourselves—what are the questions which the chemist is helping to solve, and what are the customs which with his valuable aid are being changed for the benefit of humanity? In the realm of sanitation, for example, the chemist has given assistance that could have come from no other source. To-day he is elucidating the factors which are contributing to the pollution of our atmosphere. In this respect the National Committee for the Investigation of Atmospheric Pollution is doing splendid pioneer work, led by Dr. J. S. Owens, the Secretary of the Committee, and important generalisations can already be formulated as a result of the findings now recorded. There can be no doubt that the domestic fire is responsible for the main part of the serious pollution of the atmosphere by soot particles; and this involves not merely an enormous waste of fuel, but, by causing fogs and an impure atmosphere, adds to our discomfort. The early morning, when fires are lighted, is the time of greatest pollution, and if this smoky period could by some means be eliminated, much would have been accomplished. Even a superficial consideration of this question leads to the conclusion that it has an intimate connection with our health, and the time must come when we shall decide that this pollution cannot longer be allowed to continue, for pure air is almost as important as good housing.

Pure water is a necessity for civilised man, and here again the chemist has shown wherein danger lies, and has selected for the community those supplies which are comparatively free from undesirable pollution. Pure food is man's next concern, and although we have not got this in its entirety, we have been able, by the help of the chemist, to avoid many of the more obvious pitfalls, and to restrict within narrow limits the use of foods which are deleterious and objectionable. But it must be pointed out that our food laws are antiquated in many respects, and on some questions they have failed adequately to protect the consumer. For this, however, the chemist cannot be held responsible, since in and out of season he has shown successive Governments and Government departments the exact weakness of the legal position. The reform of the laws dealing with these important matters should not be longer delayed. In the matter of contamination by flies, which is a serious menace to the purity of foods, the chemist's knowledge has led to the discovery of efficient methods of treatment of manure heaps, which, if they were put into effective operation, would in a very few years materially lessen this danger.

Our clothing has received attention in many particulars from the chemist, who has added to the decorative effects of many kinds of material by putting at the disposal of users artificial silks of great brilliance. If these have not yet attained the strength of natural silks when wet, they are still wonderfully successful productions. The use of flannelette was for long attended by danger when in proximity to fire, but the chemist has produced a safe flannelette so treated by fire-resisting substances that no one now need be clothed in dangerous fabrics of the older kind.

Our bedding and upholstery were for years suspect as to cleanliness in many instances, but the passing of the Rag Flock Act put an end to the grosser filth that was sometimes present in certain cheap materials, and it was the chemist whose methods made this reform possible. All flocks made from rags have now to be subjected to such cleansing processes that they are no longer a likely source of disease. The chemist has also elaborated those methods, now well established though ever undergoing improvement, which enable us safely to dispose of our refuse and waste products of all kinds. Without such means, in the case of sewage disposal and in the destruction of decomposing foodstuffs, our health would suffer to a serious extent.

The British nation may justly pride itself on the fact that in no other country are the broad principles of public health more generally recognised than here. Pure air, pure water, sensible clothing, and scientific methods for the disposal of all refuse are the first essentials of a healthy people. Some day also we shall decide to curtail the activities of those gentry who by specious advertisements of their nostrums—mainly obnoxious, as the work of the chemist has shown—persuade an ignorant public to swallow drugs and dubious mixtures to the detriment of the consumers' health and peace of mind, and usually to the benefit only of the pocket of the quack himself. In such practical ways the chemist is taking the lead in striving to improve the conditions of life and to conserve the health of the people.—Yours, etc.,

ARNOLD R. TANKARD.

The City Laboratories,
40, Lowgate, Hull.

Dr. Häusser on the Häusser Process

To the Editor of THE CHEMICAL AGE.

SIR,—I beg to refer to the editorial article on "The Future of the Häusser Process," which appeared in your valued journal of September 23 last, in which the opinion is expressed that in the Häusser explosion process the power wasted is almost sufficient to break the heart of an engineer or gas manufacturer. As I would not like to be the unwitting cause of excessive mortality of this description amongst technical men, I hope that you will publish this letter and so assist in preventing fatalities.

Tests on an industrial scale with bombs of 100 and 300 litres have shown that the yield of acid rapidly increases with the size of the bomb, and with 1,200–1,500 litre capacity a yield of 150 grams of HNO_3 is to be expected per cubic metre of coke-oven gas or 4,000 calories (*see* my article in the *Journal* of the Society of Chemical Industry, pp. 253–259R, 1922.) With the small bombs of 100 litres capacity 50 per cent. of the calorific value of the gases burnt in the bombs was recovered in the form of high pressure steam. With large-sized bombs this percentage would be materially increased, and is sufficient to cover between 66 and 75 per cent. of the power requirements of the process. The remaining power requirements are amply covered by the energy contained in the compressed exhaust gases provided that the nitric oxides are absorbed under pressure as proposed by me. It follows that the external energy required for the process is *nil*, and this has already been pointed out by Mr. C. J. Goodwin in the very excellent paper which he presented before the British Association (THE CHEMICAL AGE, pp. 414–416, 1922).

With reference to the economics of the Häusser process, and taking as a basis of comparison German pre-war prices, we find that 1.20 marks represents the value of combined nitrogen per kilogram in fertilisers corresponding to 1.70 marks in the form of 50 per cent. acid such as would be obtained in an absorption plant working under pressure. As against this figure, if the gases are used for generation of power in large gas-engines, one cubic metre of coke-oven gas of 4,000 calories will give one kilowatt hour. It may be emphasised that gas-engines have not found favour for coke-oven gases, and in the alternative case of a steam turbine plant the return is about 0.7 kilowatt hour. From the above it will be seen that one cubic metre of coke-oven gas will yield 150 grams of HNO_3 worth 0.04–0.05 mark as against one kilowatt hour worth 0.03 mark, or with steam plant only 0.7 kilowatt hour worth 0.021 mark. I venture to think that this comparison would hardly break the heart of even a gas engineer, but it would certainly be a source of delight to a chemical engineer.

To carry out the explosion process in an internal combustion engine, as suggested in your editorial note, would obviously be advantageous, but unfortunately the prospects of designing a technically successful plant are very slender, particularly in the case of a gas-engine. The length of time at which the maximum temperature persists, and therefore the available time for the formation of nitric oxide, is much too short, and this will be obvious by comparing the pressure time diagram of an explosion bomb with that of a gas engine. The conditions are even more unfavourable in the case of a Diesel type engine in which there is a flame combustion as distinct from an explosion. About four years ago a German engineer endeavoured to obtain nitric oxides in a high-pressure Diesel engine, but failed to obtain satisfactory results.

The use of a Humphrey pump or of gas turbines with special combustion chambers is more hopeful, because in such

cases it is possible to increase slightly the time of explosion and that of formation of nitric oxide. The stumbling-block is the question of efficient regulation and the fact that even under a slight load the conditions for formation of nitric oxide rapidly become unfavourable with corresponding decrease in yield. Of course, it is possible to conceive of large power stations in which the constant minimum load is covered by nitric oxide explosion units, the peak loads being covered by the ordinary type of power plant. We should then learn afresh that it is not advisable to expect a single machine to perform two different duties, because this inevitably leads to complicated design and operation which more than counterbalances any possible advantages. Simplicity is the keynote of permanent technical progress, but simplicity is always difficult.—Yours, etc.,

F. HÄUSSER.

Dortmund-Eving,
October 30, 1922.

Safeguarding of Industries Act: Part I

To the Editor of THE CHEMICAL AGE.

SIR,—In view of the forthcoming General Election it may not be inopportune at the present moment to call renewed public attention to the Bill passed by the late Government under the misleading title quoted above and more popularly mis-known as the Key Industries Act.

It will be remembered that the avowed and sole object of Part I. was to ensure the manufacture in the United Kingdom of various chemicals, etc., that are essential to the nation's safety in time of war. I say avowed object because whilst all will afford whole-hearted sympathy to so desirable an aim, the application of the measure stamps it principally as a camouflaged, though inadequate, injurious and unjust attempt to institute tariff reform.

In practice the Act covers and levies an import duty of 33⅓ per cent. on (1) well over 2,000 chemical products that are *not* made and are not likely to be made in the United Kingdom; (2) hundreds of products that are not "key" industries and which have no relation whatever to the nation's safety in time of war, thereby endangering the nation's trade in time of peace. This 33⅓ per cent. tax is levied on hundreds of products which are wholly or chiefly used for industrial purposes, and is therefore heavily handicapping the British manufacturer in both his home and export business by making him pay more for his raw material than his foreign competitor. On the other hand it allows the importation free of duty of many products which are manufactured in this country.

A straightforward and self-confessed system of tariff reform may or may not be in the national interest. That is a point which I am not prepared to contest one way or the other. But the average tariff reformer is in the first place honest, and has sufficient confidence in the righteousness of his cause to deprecate any attempt on the part of his political leaders to introduce any tariff reform measure under a misleading guise. And, secondly, he usually advocates the taxation of finished products, not of raw materials, with the inevitable consequence of hampering many of the principal British manufacturing and exporting trades.

The introduction of this legislation some twelve months ago was in the nature of an experiment and the outcome of a political compromise. It has proved itself a failure. It does not afford even the protection intended. It is hopeless as a source of revenue, costing more to enforce than it brings in. It penalises the British manufacturer of finished goods and hampers the export trade so vital to the welfare of the country.

To detail a fraction of the injustices, absurdities and anomalies which have arisen out of this Act would occupy too much of your valuable space. May I say, therefore, that I shall be happy to furnish further information on the subject to anyone who may care to communicate with me direct.

But every candidate at the coming election who professes to put Country before Party and to have at heart the welfare of Britain's trade should be asked to pledge herself or himself to support the revision of this measure and its restriction to *bona fide* "key" products.—Yours, etc.,

O. F. C. BROMFIELD, Secretary,
The British Chemical Trade Association.

80, Fenchurch Street, E.C.3.
November 7, 1922.

Reviews

INORGANIC CHEMISTRY. By E. J. Holmyard, B.A. London: Edward Arnold & Co. Pp. 560. 6s. 6d.

This is a school text-book. The author states that he has not hesitated to mention uncommon substances where they are likely to thrill the youthful imagination, and has included many biographical and historical facts because it is well known to every teacher that these tend to fix the attention and arouse the enthusiasm of the student.

School chemistry books necessarily tend to become more and more crowded with theories which boys of normal disposition and intelligence must find uninteresting and difficult to understand, and wearied minds will often turn with relief to the lighter portions of this book. Mr. Holmyard has not avoided any of the theoretical subjects commonly discussed with lads preparing for chemical examinations, for he has chapters, in Part I., on the kinetic theory of gases, thermal dissociation, electrolysis, osmotic pressure, the ionic theory, and so on. In Part II. the elements and their compounds are discussed. Mr. Holmyard was fortunate in obtaining the assistance of several distinguished men of science as critics and proof readers, so the book as published does not call for much criticism.

With regard to the purification of coal gas the chemical staff of the South Metropolitan Gas Co. will probably be surprised to learn that "Clowes, however, showed in 1916 that by passing coal-gas over finely divided nickel at 250-300° reduction of the carbon disulphide by the hydrogen present was brought about" (page 285). It is true that Dr. Clowes mentioned the nickel catalytic process in a paper communicated to the Society of Chemical Industry in 1916, but he was merely referring to a process which had been used for some years by the South Metropolitan Gas Co. and which was the outcome of an investigation by Carpenter and Evans. Before preparing a second edition of his book Mr. Holmyard should read the lecture on "Purification of Gas by Heat" delivered by Dr. Carpenter in 1914 before the Institution of Gas Engineers.

The full-page portraits of Ramsay, Dalton, Boyle, Gay-Lussac, Berzelius, Faraday, Priestley, Lavoisier and Dumas are interesting and the book may be recommended as eminently suitable for the use of senior boys studying under a competent instructor.

H. F. H.

THE CHEMISTRY AND TECHNOLOGY OF GELATIN AND GLUE. London: McGraw, Hill and Co., Inc. Pp. 644. 30s.

Dr. Bogue's treatise will be welcomed both by those practically interested in the subject and those to whom gelatin is particularly interesting as a typical colloid. It may be considered as marking the newer standpoint from which the chemist regards the manufacture and testing of gelatin and its associates. Hitherto, we have had on the one hand practical books containing accounts of the general processes with more or less discreet accounts of the tricks of the trade and the mysteries of the art, and on the other, accounts of their efforts to devise a satisfactory method of testing and evaluating glues by analytical and consulting chemists. Apart from this, there has been an ever-increasing volume of scientific research into the properties of colloids, and the gelatin colloids in particular have been much investigated.

Dr. Bogue has been one of the most prominent and successful contributors to this literature, and at the same time his connection with the glue and gelatin industry entitles him to speak with authority on the practical details. His book is an attempt to correlate the work in the newer sphere of colloid chemistry with the more purely chemical methods of the analyst with the practical experience of the glue

factory manager. The result is a fascinating treatise which contains a wealth of information hitherto scattered through scientific journals, and cannot fail to stimulate the interest of both chemist and works manager, and to suggest new lines of development.

The physical chemistry of gelatin is very thoroughly treated in the first portion of the book—it being considered both as a lyophilic and an amphoteric colloid. In the following sections, which deal with the manufacture and testing of glues, the results of this scientific investigation are systematically applied. To the chemist, the results will prove particularly valuable, especially in the consideration of the value and significance of the viscosity of solutions of glues and the correlation of the results with those of the setting point and jelly test. Dr. Bogue's work throws much new light on this subject, which has been a fruitful theme of discussion between chemists and practical men, and given sufficient interest on the part of the glue-maker, the possibility of a standardisation of testing and a more certain interpretation of results will be greatly increased.

At the same time the more purely chemical aspect of the problems of gelatin have not been ignored, and the resumé of the existing state of our knowledge of the chemistry of the proteins will be appreciated. An account of the methods of determining P.H., and its significance, and a chapter on "Water-Resisting Glues" are other noteworthy features of the book.

The book should help materially in breaking down the conservatism of one of the oldest industries and bringing it into line with the scientific manufacturing processes. The chemist has learned much from the study of the glue manufacturer's product—indeed, a new realm has been opened to him, and this treatise should prove to the industry that the time has come when the chemist can apply his knowledge to the industry with beneficial results. It will also provide the industrial chemist with valuable assistance in his efforts to justify such hopes being centred on him.

T. H. B.

ORGANIC CHEMISTRY. By W. H. Perkin, Ph.D., Sc.D., LL.D., F.R.S., and F. S. Kipping, Ph.D., Sc.D., F.R.S. (New Edition.) London: W. & R. Chambers. Pp. 681. 8s. 6d. net.

The text-book of organic chemistry by Perkin and Kipping is too well known to need description. It has had a long and deservedly popular life. It is only necessary, therefore, to point out the changes in the new edition. The most important is the additional twelve pages of matter which form a new chapter at the end of the book and includes the somewhat diverse subjects of organic catalysts, Thiele's theory, the hardening of oils, and the cracking of petroleum. It is not clear why Thiele's theory should be interposed between organic catalysts and the hardening of oils, which obviously belong together.

No doubt the introduction of these new subjects in their proper places would entail fundamental alterations in the whole book. At the same time it must be admitted that the arrangement of these necessary and important additions is unfortunate and the same applies to Chapter 39 on carbohydrates, which occupies the curious position between the terpenes and the cycloparaffins. The other changes are a short description of isatin, indole and other compounds related to indigo. Chattaway's explanation of the formation of allyl alcohol and formic acid and Werner's process for preparing methylamine. Some parts of the chapter on the terpenes have been modified and several new synthetic products have been mentioned.

The authors fall into the not uncommon error (p. 676) of assuming that muconic acid forms a 1 : 4 dibromide, a statement which is nowhere made by Thiele and is probably incorrect.

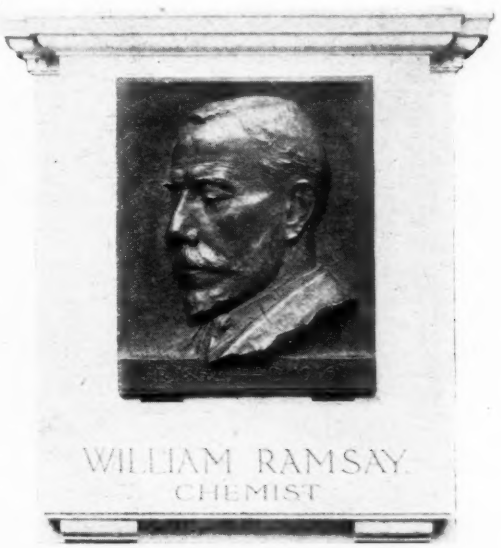
J. B. C.

The Ramsay Memorial Tablet

Tribute to a Famous British Chemist

THE unveiling of the tablet in memory of the late Professor Sir William Ramsay, K.C.B., F.R.S., took place in Westminster Abbey, on November 3, the ceremony being performed by the Duke of York in the unavoidable absence of the Prince of Wales. The memorial tablet, which is illustrated below, consists of a profile bust of Sir William Ramsay executed in bronze, and set in a marble frame, on the back of which the inscription, "William Ramsay, Chemist," is engraved in gold letters. For the purpose of the unveiling the memorial was temporarily set up, facing down the nave, under the memorial of Sir Isaac Newton, but its final position will be on the wall of the north ambulatory.

Performing the unveiling ceremony, the Duke of York described the tablet as a lasting memorial to Sir William Ramsay, the great chemist. In accepting the tablet, the



Dean of Westminster referred to the galaxy of memorials to scientists which had been set up in the North Aisle, the number including Darwin, Wallace, Lister, Adams, Stokes, Joule and Hooker. They were now adding the name of the most famous chemist of our century.

Among those who had accepted invitations to attend the unveiling were Professor Sir William and Lady Bayliss, Sir George and Lady Beilby, Lord Blyth, Sir John and Lady Bradford, Professor Sir William and Lady Bragg, Professor Henri Le Chatelier (representing the Académie des Sciences, France), Sir Valentine Chirol, Sir James Crichton-Browne, Sir William and Lady Collins, Sir Henry and Lady Craik, Sir T. Gregory Foster, the Provost of University College, London, and Lady Foster, Sir George and Lady Frampton, Professor Francis (representing the University of Bristol), Sir Richard T. Glazebrook, Sir Richard Gregory, Sir Robert Hadfield and Lady Hadfield, Sir Herbert and Lady Jackson, Sir Roderick and Lady Jones, Sir Alexander B. W. Kennedy, Lord and Lady Meston, Sir Alfred Mond and Lady Mond, Professor Sir Frederick and Lady Mott, Lord Parmoor, Sir Charles Parsons, Sir John Parsons, Sir Richard Redmayne, Colonel Sir Ronald Ross, Sir William and Lady Tilden, Mr. Douglas Vickers (representing the University of Sheffield), the Vice-Chancellor of the University of London and Mrs. Waring, and Sir Aston and Lady Webb.

The Duke of York was attended by certain officers of the Ramsay Memorial Fund, among whom were Sir Hugh Bell (chairman), Professor J. Norman Collie (treasurer), and Dr. Walter W. Seton (organising secretary), and Professor Sir Charles Sherrington, president of the Royal Society and a vice-president of the Fund, Sir T. Gregory Foster, Provost of University College, London, and Mr. H. G. Waring, Vice-Chancellor of London University.

Fine Chemicals and National Prosperity

By Sir William J. Pope, K.B.E., F.R.S.

Under the title "Shall the State throw away the Keys," an exposition of what fine chemicals mean to the nation has been published by the Association of British Chemical Manufacturers. We give below a foreword contributed by Sir William J. Pope.

THE history of a nation in general falls naturally into well defined periods, each limited by some event of large national importance; the last few years have seen the close of one of the great periods in the history of many Empires. We are ourselves now in the opening years of another chapter in the history of our country, and the responsibility rests upon us of weighing up the advantages and disadvantages of the national situation and resources, and of applying the experience gained in the past to the continued development of our great national heritage.

Everyone will agree that the factors affecting our national prosperity are very different from those which ruled before the cataclysm of 1914. Until that date we had been content to amass wealth by the development of many industries in which we were pre-eminent, and to leave others, erroneously presumed to be comparatively unimportant, unlucrative and unsuited to the British temperament, to be exploited by Germany. Thus, whilst our textile industries were the foremost in the world, we depended almost entirely on the German factories for the dyes essential to those industries. Many gloomy prophets foretold disaster from permitting the German to control many of our staple industries by allowing him a monopoly for the supply of many essential materials; these Jeremiahs vastly understated the gravity of the situation. Probably few can even yet fully realise the perils which faced us in 1915 and 1916 owing to the fact that the production of many chemical products was entirely in German hands; scarcely any British manufacturing industry can be named which was not in danger of complete stoppage owing to this fact. The production of explosives was hampered because we had but little plant for making fuming sulphuric acid, and our steel industries were endangered because Germany had a monopoly in the supply of the rare metals which are essential components of hard steels.

Improvised Manufacturing Methods

One of the most surprising events of the war was the facility with which, although at great cost, Great Britain organised sources of supply and improvised methods of manufacture to such effect that at the Armistice we were producing all those essentials for which we had been previously dependent on Central Europe; our success in this direction gives the lie to the statement, made so often by the German that his countrymen believe it implicitly, that the Briton is temperamentally unfitted to become a chemical manufacturer. The question whether this country will or will not build up a sufficiently organised and completely interlocked fine chemical industry is a perpetual subject for discussion in the German technical journals; the large and illuminating literature on this matter shows that the German realises well that if we succeed our future amongst the nations is assured, but that if we fail, as he hopes, we shall have lost the peace. We shall once more have to rely upon the German factories for the supply of vital materials for our industries. Should another great European war break out we shall not be accorded leisure for improvisation; of perhaps more moment is the fact that, in the increased strenuousness of coming industrial competition, the control of key industries by Germany will provide that nation with an efficient strangle-hold upon our great staple industries. Many instances have been given in illustration of the fact that a flourishing fine chemical industry is essential to the continued success and development of all our great manufacturing activities; hundreds more might have been given without exhausting the list. We shall never revert to a condition of healthy commercial rivalry, untainted by the hates and hopes born of the recent war, until we can convince our late enemies that it is the firm determination of Great Britain to place the manufacture of fine chemicals upon an unassailable basis; an instance may be quoted which will make this clear. One of the German fine chemical works has recently produced a material which is said to be a cure for sleeping sickness and other allied tropical diseases; this substance is now being tested under German auspices in British and Belgian Africa. Meanwhile, it was stated at the recent meeting of the German Association of Tropical Diseases that this material is the key to tropical Africa and consequently to all the colonies, and that the German Government must "be required to safeguard this discovery for Germany; its value is such that any privilege of a share in it granted to other nations must be made conditional upon the restoration to Germany of her colonial empire." A well-organised fine chemical industry in this country could undertake a scheme of work routine-like in its simplicity, which would almost infallibly result in the discovery of a cure for sleeping sickness; if Germany is to be allowed a monopoly in curing a disease which does not occur in her own territory she will thereby forge for herself a very powerful political weapon.

German Dumping Methods

The instance just quoted is interesting as illustrating one peculiarity of the fine chemical industry; it is an industry which deals in specialities, each perhaps small as measured by money values, but each of essential importance to the modern world. Unlike others, the fine chemical industry comprises a vast variety of products, many the outcome of lengthy series of manufacturing operations; it thus lends itself to a very simple method of exploitation which has been largely employed to our disadvantage during the past few years. Just after the Sankey judgment permitted the free entrance of fine chemicals into this country some years since, I had need of supplies of a number of fine chemicals and asked for quotations from Germany. I found that quite small quantities of the substances on my list which were made in this country as well as in Germany would be supplied at dumping prices; those not made in England were quoted at ridiculous prices. Isoquinoline, of which I needed some kilos, was quoted at £50 per kilogram; in my necessity I made this substance at a cost of, roughly, £1 per kilogram, but if I had had urgent need of 1,000 kilograms at short notice, I should have been forced to purchase at £50 per kilogram, and should thus have contributed very considerably towards the expense incurred by the German fine chemical manufacturer in underquoting for other British-made fine chemicals and so making their manufacture here economically impossible. An identical method of treatment is applicable to many thousands of essential fine chemicals and complicates the nascent industry in this country; unless a legislative barrier is maintained, any substance—the manufacture of which is undertaken in this country—will be dumped from Germany, the expense being recouped by unduly high charges for fine chemicals not yet made here. It is this circumstance which, in large part, necessitates untiring attention to the development of the fine chemical industry in Britain; the already long list of fine chemicals produced in this country which has been issued by the Association of British Chemical Manufacturers has to be still further lengthened. Owing to the large number of substances concerned, German dumping may confer upon one industrial a financial benefit for which another British industrial will have to pay, and the financial balance must in the end fall against this country. Unfair competition of this kind would hardly arise if we could succeed in convincing Germany that Great Britain is thoroughly determined to possess a powerful and comprehensive fine chemical industry. Many of us believe that the salvation of industry is to be found in Free Trade; Free Trade cannot be established until our competitors are convinced that preferential pricing on a basis independent of manufacturing costs is not a paying proposition.

It has been remarked above that the British war effort effectually proved the absurdity of the German advertising slogan that this country has no genius for fine chemical manufacture; the progress made since the war may well increase our confidence. Other conditions being equal, the fine chemical industry of England can compete on equal terms with that of Germany; but other conditions are not equal, and the dice indeed are heavily loaded in our favour. Whatever the shortcomings of British institutions—and they are many—those institutions still remain the best in the world. No

country enjoys so stable a system of government as ours; our commercial integrity is proverbial; our banking organisation is the most reputable which exists, and London is probably still the financial centre of the world; our scientific men have always led; we have centuries of manufacturing experience behind us, and competent judges have often described the English workman as the best in the world. We enjoy another and a unique advantage; no natural product—animal, vegetable or mineral—can be named which cannot be supplied under highly favourable conditions from some one or other component part of the British Empire.

With all these advantages, and with the sole handicap that a few years are required for the organisation and building up of a complete network of fine chemical industries, it would be disgraceful if we should fail. We cannot fail if public opinion realises that a flourishing fine chemical industry is a vital necessity to the prosperity of our Empire and insists that national support is given to the young enterprise. We cannot remain neutral in this matter; if we withhold the necessary aid we shall thereby be giving support to the German fine chemical industries and re-establishing in an intensified form the former German control over our staple manufacturing industries.

Although I am not myself engaged in industrial enterprise, my professional work brings me into contact daily with illustrations of the truth of the facts and the cogency of the arguments quoted in the following little pamphlet. For this reason I have welcomed the opportunity of writing these few introductory pages and of commending the subject-matter of the pamphlet to the serious consideration of my fellow-countrymen.

Streatfeild Memorial Lecture

Professor Desch on the Metallurgical Chemist

THE Streatfeild Memorial Lecture was delivered at Finsbury Technical College, London, on Thursday, November 2, by Professor Cecil H. Desch. In his opening remarks, Professor Desch emphasised the value of trained chemists in the field of metallurgical and chemical industry to control and guide these industries, and he deprecated the common practice of placing the conduct of chemical enterprises under the direction of financiers who, being unable to appreciate the difficulties and possibilities of such enterprises, consequently emphasised the importance of finance to the detriment of the healthy development of the concern as a whole.

Training of Metallurgical Chemists

The basis of the training required for a metallurgical chemist, as for many other responsible posts in industry, must be mathematics, physics, and chemistry, and specialised work should not be entered upon at too early a stage. Passing to various aspects of the work of the metallurgical chemist, the lecturer emphasised the importance of the chemical knowledge and manipulative skill required for analyses, such as those of a modern high speed steel, the training in physics requisite for a proper appreciation of the examination of physical properties, the need for some engineering knowledge for the carrying out of some large-scale metallurgical operations, the value of physical chemistry in metallography, and the value of some knowledge of mineralogy, geology, and crystallography.

Knowledge of Balanced Reactions

In the first place the analysis of alloys and high speed steels had become so complicated that a well trained operative was no longer sufficient for dealing with the difficulties which arose in the course of such work. In order successfully to control the manufacture of steel in the electric furnace or in the open-hearth process, an intimate knowledge of balanced reactions was requisite, and the chemistry of the changes involved in the manufacture must be thoroughly understood. The training in physics and physical chemistry was of the greatest use in studying the physical conditions of steel and alloys, the measurement of temperatures, and the effects of heat treatment.

Whilst the manipulative skill required for metallography might readily be acquired, the interpretation of the results obtained could only be undertaken by the chemist conversant with scientific principles. The help of physics was here again of great value; the science of metallography, which had developed during the last 50 years, might be regarded as a branch of applied physical chemistry, and the study of the crystal structure of the metals and alloys, as revealed by examination by X-rays, was giving extremely valuable results.

Co-operation of Chemists and Engineers

The lecturer considered that some training in engineering was of the utmost value to the metallurgical chemist, particularly in carrying out mechanical tests, the study of fatigue in metals, and the extraction of the metals from their ores on a large scale, but he did not regard favourably the attempts now being made to produce the "Chemical Engineer." Probably the best results could be obtained by the co-operation of chemist and engineer, both with a certain amount of training in common.

Professor Desch then drew attention to the value of mineralogy and geology to the metallurgist, and the extreme importance of further work on refractory materials to the metallurgical industries. The metallurgist must be, before all things, a chemist, and able to use scientific literature, knowing where to search for information on any subject which might come before him. He must not, however, attach too little value to the experience and knowledge of the foreman or skilled workman. For example, furnacemen could often judge temperatures in the neighbourhood of 1,000° with an accuracy within 20°.

Economic Utilisation of Fuel

The freshman from college would find much to learn in the works, and his value would be greatly advanced if he would go into the works during vacations, and so obtain a first-hand acquaintance with works conditions. Secrecy and rule of thumb methods had completely disappeared in the steel industry, and co-operation between the scientific advisers to the advantage of the whole industry, had taken its place. One matter awaiting immediate attention was economy in the utilisation of fuel and other natural resources.

New Sodium Nitrate Process

A NEW process for the extraction of nitrate of soda from caliche is reported to have been invented by Señor Buenaventura Junquera, a Spaniard. In recent official tests of the Junquera process, held at Oficiana Galicia, near Iquique, Chile, the claims of the inventor were, states *Drug and Chemical Markets*, in a large measure recognised. The new process has been designed to cheapen the cost of Chilean nitrate, so that the competition of artificial products will be postponed for many years. An increase of ten to twenty fold in the nitrate yield is claimed, as caliche as low as 10 per cent. can be worked profitably. In the Junquera process, the material is ground to pass a ¼-in. mesh, and then highly heated. It is then placed in a battery of eight gyratory drums, each 6ft. in diameter, and having filter-cloth sides. Water, or weak solution, driven by centrifugal force, extracts the nitrate by passing through drums in rotation. Leaving the eight and last drum the water is saturated with nitrate, and is allowed to cool and deposit its nitrate contents in large settling tanks. In the recent test with 12 per cent. nitrate material the extraction was said to be complete, with oil fuel consumption of only 21 lb. per ton.

The General Election and Chemical Industry

A MANIFESTO issued by the Free Trade Union demands the repeal of the Safeguarding of Industries and Dyestuffs Acts.

It is reported from Swansea that Sir Alfred Mond has now allayed the fears of his Free Trade supporters, who were concerned over his support of the Safeguarding of Industries Act.

In addition to the candidates referred to in THE CHEMICAL AGE last week, the following are seeking election or re-election: Mr. J. W. Wilson, of Albright and Wilson, Ltd.; Col. V. Morgan, of the Morgan Crucible Co., Ltd., and Sir William Edge, of W. Edge and Sons.

Major A. G. Church, secretary of the National Union of Scientific Workers, who is standing as Labour candidate for Spelthorne, informed a representative of THE CHEMICAL AGE that his Parliamentary aims might be summed up in the slogan, "Research and more Research." He thinks there is insufficient scientific representation of a Dyestuffs Licensing Committee, and is opposed to the Geddes recommendations in regard to the research services.

Society of Chemical Industry

Annual Dinner of the Birmingham Section

DR. E. B. MAXTED presided at the annual dinner of the Birmingham and Midland Section of the Society of Chemical Industry, held on November 4, at the Queen's Hotel, Birmingham. Dr. E. F. Armstrong, on behalf of the members, made a presentation to Mr. and Mrs. F. R. O'Shaughnessy. To Mr. O'Shaughnessy, who had acted as hon. secretary of the section for the past 17 years, he presented a laboratory microscope with accessories and a testimonial, and to his wife, an opal and diamond cluster ring. Among those present were Mr. H. Silvester, Mr. E. C. R. Marks (Chairman of the Midland Section of the Institution of Mechanical Engineers), Mr. A. J. G. Smout (President of the Birmingham Metallurgical Society), Professor G. T. Morgan (head of the Chemistry Department, University of Birmingham), Professor A. R. Ling (University School of Brewing), Dr. H. W. Browndson, Dr. Morrell, Dr. Parker, Mr. N. P. Booth, Mr. A. E. Tucker, Mr. E. C. Rossiter, Mr. F. H. Alcock, Mr. S. R. Carter (Birmingham University), Mr. W. A. S. Calder, Mr. George King, the new Honorary Secretary, and others.

After the toast of "The King," Mr. H. Silvester proposed the health of Mr. and Mrs. O'Shaughnessy, and expressed on behalf of the Midland Section their appreciation of the presence of Dr. Armstrong. They regarded it as a gracious recognition of the long, loyal, and able services rendered by Mr. O'Shaughnessy, not only to the Midland Section, but to the whole Society. The reformation of the Section 17 years ago was largely due to the initiative and skill of Mr. O'Shaughnessy. The Society of Chemical Industry was founded in 1880, and shortly afterwards the Birmingham Section was formed. It remained in existence, however, for only a short period. Sir William Tilden then started a new society called the Birmingham Chemical and Metallurgical Club, which met at the White Horse Hotel, and after dinner discussed contributions on chemical subjects. Later it removed to the Woodman Hotel, where light refreshments took the place of the dinner; and then Mr. O'Shaughnessy intervened. He pointed out the great disadvantage they were under in that publicity was not given to the discussions, and on his suggestion, the Birmingham and Midland Section of the Society of Chemical Industry was again formed. The Chemical Club left a memorial of its existence in a gift of £10 to the Library of the Chemical Department of the Birmingham University, where the Midland Section of the Society now held their meetings. Professor P. F. Frankland, of the University, was the first President and Mr. O'Shaughnessy the first Hon. Secretary.

In addition to a multitude of other duties, Mr. O'Shaughnessy had organised two general meetings of the Society—in 1907 and 1917—and he had arranged various meetings with other societies and visits to works. At all times he had shown public spirit, tact, and enterprise.

Presentation to Mr. O'Shaughnessy

The gifts were then handed to Mr. and Mrs. O'Shaughnessy, and, in doing this, Dr. Armstrong made a generous acknowledgement of the hard and continuous work of the secretaries of the local sections. Mr. O'Shaughnessy had a great record; he hoped the microscope would be of much value to him in the laboratory. He had already enriched chemical science and the world by his discoveries; might the microscope enable him to amplify his discoveries, particularly in relation to the scientific treatment of sewage.

After acknowledging the gifts, Mr. O'Shaughnessy said, that in looking back over the 17 years he regretted the absence of old and familiar faces—of Mr. Thomas Tyrer, Mr. C. G. Cresswell, and Mr. Lewkowitsch. Happily Professor Frankland and Mr. Silvester were still with them. He had rather had the impression since they changed the character of the annual meetings that something had gone out of the Society—something which was invaluable. There seemed to be a tendency rather to eliminate or reduce the human or social side to the enhancement of the technical side. Whilst their object as a society was for considering and recording technical and scientific work, he did feel that they might with advantage give a little more attention to the social side.

The toast "The Society of Chemical Industry" was proposed by Mr. E. C. R. Marks, who pointed out that in past days the chemist was often his own engineer and the engineer his own chemist. While they owed much to the men of the past, their business was, however, not to copy them but to follow them in their spirit. He believed the mechanical engineers were able to be of assistance to the chemists; his view was, they could work together to their mutual advantage and to the benefit of mankind. He was afraid the "man in the street" did not adequately recognise the great part the chemist played in the preparation of food and drink, and a vast number of other things that were used in the home. In looking over chemical works he had sometimes been impressed by the crudeness of the engineering appliances in use, and he respectfully suggested that the mechanical engineer might be able to assist the chemist in some of the problems that had to be dealt with on the engineering side.

Policy of the S.C.I.

Dr. E. F. Armstrong, whose name was coupled with the toast, said the Society of Chemical Industry had a very definite policy. Their policy this year had been to put the chemical profession in a position they thought it ought to occupy—on a par with that of the lawyer, the doctor, and the engineer. The latter, who was perhaps more akin to the chemist, had learnt the necessary lessons of the value of co-operation and of publicity. Chemists, he said, must within the next few years make up their minds whether they were going to rehabilitate themselves as a profession, or whether they were content to remain in the wilderness. He thought it was his duty to go to the sections and preach this doctrine, as it was their duty to do all they could to enhance the status of the profession and to cultivate professional etiquette. He was particularly glad to hear Mr. O'Shaughnessy's reference to the human side. As chemists, they do all they could by practice and research for the benefit of chemical industry and of the world, but they must also be men of broad outlook, ideals and ambitions, and they must cultivate the human side in themselves. He did not think those facts had been driven home enough, and it was necessary for someone to keep on saying it.

The Guests

The toast "The Guests" was submitted by Professor Ling, who said it was always pleasant to look back on the early days of the Society of Chemical Industry. They cordially welcomed Dr. Armstrong, whose acquaintance he first made as a child at his father's house. Besides being an academic man and a first-class technologist, Dr. Armstrong was a good business man and a man of affairs.

The toast was acknowledged by Mr. Smout, who observed that the Midland Section of the Society of Chemical Industry had always worked in the closest harmony with the Birmingham Metallurgical Society. From that section, many of their presidents, vice-presidents and principal officers, had been drawn. As metallurgists they realised how closely they must work with chemistry; in fact, many of them were chemists at heart, were real chemists, or had had a large amount of chemical training. In the past, metallurgy had developed more on the engineering than on the chemical side, but during the past few years they, as metallurgists, were coming back more to the basic principles: they were coming back to chemistry.

Use of Oxygen in Metallurgical Operations

THE use of oxygen in connection with the enrichment of the blast in the blast furnace and in practically all phases of pyrometallurgical work will furnish the key to success in the further development of such metallurgical operations, according to Dr. F. G. Cottrell, formerly director and now consulting metallurgist of the United States Bureau of Mines, who first directed the bureau's attention to this subject. Through this enrichment process, it is hoped to increase the efficiency of metallurgical operation with a resultant production of metals at lower cost and possibly the use of lower grade ores. The Bureau of Mines has now outlined plans for two studies which will be carried on simultaneously. The first will cover the present-day processes for the production of oxygen, in order to determine the feasibility of attempting to produce oxygen, or oxygenated air, in such amounts and at such a cost as to permit of its use in metallurgical operations. The second study will be devoted to the feasibility of using oxygen, or oxygenated air, in metallurgical operations.

The Status of Chemists

Dr. E. F. Armstrong's Plea for more Publicity

THE first meeting of the session of the London Section of the Society of Chemical Industry was held at the Engineers' Club on Monday. Mr. E. V. Evans, Chairman of the Section, presided, and commented on the change of place of meeting from Burlington House, which, he said, had been tried in order to obtain a little more informal atmosphere. He also mentioned that the Section has arranged a joint meeting with the Bio-Chemical Society to be held in London on January 8 next, when the general subject for discussion would be "Micro-organisms and their Application to Industry and Research." The meeting will be held in two sessions, and will start at 5 p.m.

Dr. E. F. ARMSTRONG, F.R.S., President of the Society, then gave a lecture, in which he dealt briefly with a number of subjects. The main theme of the address, however, was the position which the chemist must take in the counsels of the nation and the endeavours which should be made to improve the status of the chemist in the eyes of the general public. He deprecated chemists allowing their names and qualifications to be placed on prospectuses of companies and similar documents with any intent to mislead the public, and urged that they should regard themselves as a society for the promotion of chemistry in industry. There was at present too much tendency to restrict the term "chemical industry," to the very definitely chemical industries. Chemistry, however, was at the foundation of all industries, and there should not be the restrictions to which he had referred. The aim should be to place the status of the chemist on a high plane, and on every occasion that he had the opportunity of speaking publicly as their president he would take the opportunity of stating the fact that chemists were a body of highly trained men, in whose hands a great deal of the future of civilisation would rest. Hitherto, the chemists had been far too modest, and they must come more out into the light of publicity.

Problems of Corrosion

Passing on to discuss several matters in which the chemist ought to take a more active interest, Dr. Armstrong referred to the question of corrosion, and recalled the recent statement made by Sir Robert Hadfield, in a communication to the Proceedings of the Royal Society, that corrosion accounted for damage to the value of £500,000,000 per annum throughout the world. Was it not possible, he asked, that if chemists had really tackled this problem, some of this damage could have been cut out?

Reference was next made to the Smoke Abatement Bill introduced in the last Session of Parliament, and exception was taken to it on the grounds that the cause of four-fifths of the smoke emitted into the air, viz., from domestic chimneys, was ignored, and the poor manufacturer, who was responsible for the remaining one-fifth, was threatened with increased penalties. The fault for the present state of affairs did not rest with the householder or the manufacturer, but, further back, with those who were responsible for apparatus to reduce smoke, for instance, and through lack of control over new buildings. A manufacturer of a particular article could not be expected to specialise in smoke abatement or fuels, and there was a vast amount of work for chemists to do in this direction if we were to bring our industrial areas to the condition of those on the Continent and in America. Incidentally, Dr. Armstrong paid a tribute to the work of the Fuel Research Board in regard to low temperature carbonisation.

A New Water Softener

Reverting to the position of the chemist, Dr. Armstrong asked for a greater degree of co-operation between chemists and engineers, and then passed on to a few details of some research work carried out in his laboratory in regard to the softening of water, the result of which has been to produce a material for softening water which is claimed to be four times as active as similar materials to zeolite, produced either naturally or artificially. The importance of the investigation, he said, was that a very great deal depended, in chemical action, on the preservation of surface. His firm had given the name of Doucil to this material, and it was believed to be a complex of Al_2O_3 Na_2O with a certain number of molecules of SiO_2. His main object in referring to this work was to point the moral of the absolute necessity for clear thinking amongst chemists.

Finally, Dr. Armstrong appealed for the abolition of much of the chemical jargon which was now in use, and deprecated the splitting up of chemists into too many societies.

Discussion

There was a discussion upon the paper, in which it was pointed out that in regard to the proposed Institute of Paint and Varnish Technologists, the Society of Chemical Industry was asked to form a Group on the lines of the Engineering Group, but turned the proposal down. One speaker, however, asked if it was yet not too late for the Institute of Paint and Varnish Technologists to be absorbed by the Society. It was also pointed out that a new Smoke Abatement Bill would be introduced into the new Parliament, and that it would be found to be a very different measure from the one introduced last session by Lord Newton.

Properties of Isotopes

Importance of the Weight of the Hydrogen Atom

A JOINT meeting of the Manchester Literary and Philosophical Society, and the Manchester Sections of the Society of Chemical Industry, the Society of Dyers and Colourists, and the Institute of Chemistry, was held on November 3, in the Textile Institute. Professor W. L. Bragg, F.R.S. (representing the Manchester Literary and Philosophical Society), presided over the meeting, which was well attended.

Dr. F. W. Aston read a paper on "Isotopes," in which he pointed out that Dalton's atomic theory postulated that atoms of the same element are equal in weight. Beyond mere speculation, the first attack on the validity of this wholly unproved hypothesis was made about 1910, when Soddy put forward his theory of isotopes and predicted the existence of varieties of lead having different atomic weights, a prediction amply verified later. The same possibility was suggested in the case of the non-radioactive elements by the positive ray analysis of neon. By this analysis one compared the weights of individual atoms, and this could now be done with an accuracy of one part in a thousand by means of the mass-spectograph. This instrument gave a focussed spectrum depending only on the weights of the particles forming the positive rays, and as these were charged atoms and molecules, their weights could be directly compared.

Integral Weights of Atoms

It was found that many, probably the majority, of the elements consisted of mixtures of isotopes. Thus chlorine (atomic weight 35·46) consisted of two atomic weights, 35 and 37 respectively. Some of the heavier elements were exceedingly complex, xenon having no fewer than nine constituent isotopes. By far the most important result was that the atoms of all elements except hydrogen had integral weights when expressed on the oxygen scale to a considerable degree of accuracy. This "whole number" rule enabled sweeping simplifications to be made in our ideas of mass. All atoms could now be considered simply as different aggregations of primordial atoms. The latter were of two kinds, positive and negative, protons and electrons, the particles of electricity itself. The fact that the elements of fractional atomic weights were mixtures of isotopes of whole number atomic weight explained at once anomalies in order such as the atomic weights of argon and potassium. On Rutherford's Nucleus Atom theory, isotopes were elements whose atoms had the same net positive charge on their nuclei (Mosley's atomic number), but different numbers of protons and electrons in these nuclei, and therefore different weights. Isotopes had practically identical chemical and optical properties. Their separation was a matter of extreme difficulty, and only the minutest charges of atomic weight had been experimentally achieved so far. The weight of the hydrogen atom was found to be greater than unity. This was, said Dr. Aston in conclusion, of great importance, for if it were possible to transmute hydrogen into any other element, prodigious quantities of energy would be liberated. This transmutation was probably going on in the sun and other stars continuously.

Society of Public Analysts

At an ordinary meeting of the Society of Public Analysts, held on November 1, at the Chemical Society's Rooms, Burlington House, London, Mr. P. A. Ellis Richards, President, in the chair, certificates were read for the first time in favour of Messrs. Henry Aldous Bromley, Robert Faraday Innes, F.I.C.; Osman Jones, F.I.C; Alan West Stuart, D.Sc. (Brux), A.I.C.; William Heaton Thorns; Walter Horace Clulow; William Plendereith Lewellen Hope. Certificates were read for the second time in favour of Messrs. George Scott Robertson, D.Sc. (Dun.), F.I.C.; Frederick John Martin, M.A. (Cantab), A.I.C.; Frederick Stanley Shadbolt, A.I.C. The following were elected members of the Society:—Messrs. Archibald Steele Whamond, Thomas John Ward.

Abstracts of Papers

A paper on "The Colorimetric Estimation of Pyrogallol, Gallotannin and Gallic Acid," by C. Ainsworth Mitchell, F.I.C., stated that the author has devised a ferrous tartrate reagent which can be used for the detection and estimation of pyrogallol, gallotannin and gallic acid. The violet colouration produced in the reaction is due to the pyrogallic group in these substances, and, applied quantitatively, affords a measure of that group in different compounds. The reaction throws light on the constitution of gallotannin. The results obtained with it do not agree with the long accepted formula for gallotannic acid or with the formula of Emil Fischer's synthetic gallotannin, but are much more in accordance with the formula recently suggested by Nierenstein, at any rate in the case of tannin from China galls, and they decide a doubtful point in connection with that formula. In using the reagent for the estimation of gallotannin in the presence of gallic acid the substances are estimated together colorimetrically in terms of gallic acid or pyrogallol. The tannin is then precipitated with quinine hydrochloride and the gallic acid again estimated in the filtrate. The difference between the two results, multiplied by a factor, gives the gallotannin. The method has been applied to the estimation of tannin and gallic acid in various natural and commercial products such as galls, tannin extracts, myrobalans, divi-divi, tannin lozenges, tea, etc. It has also been used to follow the course of the enzymic hydrolysis of gallotannin, and to study the nature of the changes which occur in the technical process of roasting myrobalans.

Dealing with "The Estimation of Narcotine and Papaverine in Opium, the authors, H. E. Annett, D.Sc., F.I.C., and M. N. Bose, who have been engaged in experiments on poppy selection with a view to the production of medicinal opium of high quality, said they have found it necessary to devise processes for the estimation of the principal alkaloids of opium, which can be carried out on the very small quantities of the drug (say, 1 to 2 grams) obtainable from the few plants produced in such selection experiments. In the case of narcotine and papaverine they have utilised an old observation of Plugge's, that on addition of sodium acetate to an aqueous opium extract, narcotine, papaverine, and narceine are precipitated. The authors find that, given the right conditions, the first two are precipitated completely, that the narceine carried down at the same time can be washed away with water, and that in the washed precipitate, after further purification, narcotine can be estimated polarimetrically.

In a paper on "The Estimation of Codeine," by H. E. Annett, D.Sc., F.I.C., and R. R. Sanghi, reference was made to an improved and simplified form of the process described by Annett and Son in 1920 (*Analyst*, 1920, 45, 321), in which the codeine is extracted by toluene from an aqueous alkaline extract of opium, converted into the hydrochloride, purified by re-extraction with toluene, and finally converted into hydrochloride and weighed as such.

Mr. J. R. Nicholls, F.I.C., stated in his paper on "The Estimation of Morphine," that if two volumes of 50 per cent. alcohol are shaken with one of chloroform and allowed to separate, the two layers are about equal in volume, the upper being about 33 per cent. alcohol and the lower having an approximate chloroform-alcohol ratio of 2:1. If the 50 per cent. alcohol contains morphine liberated by means of ammonia, the base distributes itself between the two layers, so that about 85 per cent. of the total morphine is in the lower layerf When this layer is run off, the addition of half a volume o. alcohol to the upper layer brings it to approximately 50 pef cent. alcohol again, and after shaking with 1 vol. or chloroform the second lower layer contains about 85 per cent. of the remaining morphine. Two such extractions, therefore, remove over 99 per cent. of the base, and in practice four extractions will only be necessary to remove more than 0·1gram of morphine. The presence of the alcohol retards or prevents the crystallisation of the base from the upper layer, and ensures a rapid separation. The combined extracts can easily be evaporated on the steam bath. For general application of this method of extraction, other alkaloids are removed by means of ether and chloroform from a suitably prepared aqueous solution made alkaline with sodium, potassium or calcium hydroxide. One vol. of the solution is mixed with 1 vol. of alcohol, the fixed alkalinity removed by a slight excess of ammonium sulphate, and the morphine extracted as described. Small amounts of other substances may also be removed, but these do not interfere with the estimation of the morphine either by titration, or colorimetrically or polarimetrically.

Reading a paper entitled "Further Notes on the Estimation of Potassium: by Perchlorate and Cobaltinitrite Methods," Mr. R. L. Morris, F.I.C., pointed out that the present paper was a continuation of one of his previous papers (*Analyst*, 1920, 45, 349). He then went on to describe a modification suitable for the direct estimation of potash in the presence of phosphates of calcium, magnesium, iron, etc. It is stated that sulphates should always be removed, and a method of precipitating these by barium chloride was put forward, which the author stated reduces the usual loss of potash in the barium sulphate precipitate to negligible amounts. Drushel's modification of the cobaltinitrite-permanganate process was shown to give trustworthy results, more especially for small amounts of potash, but some experience was necessary. Half saturated sodium chloride solution should be used for the final washing of the precipitate, and sulphates had no influence on results.

The Disposal of Reparation Dyes

Attitude of the B.C.T.A.

Dealing, in their latest circular, with the disposal of Reparation dyes, the British Chemical Trade Association point out that the agreement between the Government and the new agents ends on December 31 next, and that an extension for a further period has not yet been settled. It is quite possible, the circular states, that after the date mentioned the importation of these dyes will be discontinued. The various interests involved continue to oppose one another, making it apparently impossible for the Government to find a scheme that will please everyone. It is therefore thought that this, together with the experiment of the C.T.A., seems likely to influence the Government sufficiently to decide to stop further importations under Reparations. It has not yet been decided to take this course, but it is regarded as a possibility. For the time being the proposals submitted by this Association, which were adopted by the Board of Trade, continue in force. On the outstanding item of "trade discount" the Board of Trade have not yet come to a decision.

The Association have arranged with the British Dyestuffs Corporation, Ltd., for the Corporation to forward a copy of list of stocks of Reparation dyes direct to members of the Association who are interested in dyestuffs. Any member who has not received his copy should communicate with the Association at once.

German Exporting Houses

In view of the many complaints being made of unsatisfactory methods of some German exporting houses, the Association think it advisable to warn members again that they should take every precaution to protect themselves in this quarter. This refers particularly to the many new and unknown concerns which have sprung up of late in Germany. Late shipments and bad quality material seem to be the chief complaints. It is pointed out that export licences are granted by the German Government for materials at standardised values, and that it may be taken for granted that goods offered below those sterling values are, to say the least, of doubtful quality.

Finsbury Technical College Old Students

Eleventh Annual Dinner in London

THE eleventh annual dinner of the Finsbury Technical College Old Students' Association was held on November 4 at the Engineers' Club, London, when 73 members and guests participated in a very enjoyable evening.

The toast of "The College" was proposed by Mr. A. Chaston Chapman, F.I.C., F.R.S., and he spoke in glowing terms of the eminent men the College had turned out and hoped they would continue to do so for many years.

Dr. W. H. Eccles, F.R.S., referred to the loss the College had sustained in losing the Vice-Chairman of the College Delegacy, Dr. M. O. Forster, F.R.S., a past student of the College who had been appointed to the Directorship of the Institute of Science at Bangalore, and also Mr. Catterson-Smith, who had been selected to fill the chair of electrical engineering at the same Institute. He also referred to the disadvantage they were working under, inasmuch many people thought the College had closed its doors; he asked all present to try and dispel this rumour as soon as possible.

Mr. F. Gill, in proposing the toast of "The Association," gave some interesting reminiscences of some of his early visits to Finsbury, and wished the Association every success in its work.

Mr. W. G. Head, M.I.Mech.E. (the President), in his reply, mentioned that in spite of the energy of the membership sub-committee their numbers were not what they should be, and he urged all present to try and persuade more men to join. An instance of some of their activities apart from social functions was at the last annual general meeting, when a committee was formed to see what could be done with regard to a Silvanus P. Thompson Memorial Lecture at the College. Since then they had got together, and he was now in a position to announce that Sir Oliver Lodge had consented to give the first Silvanus P. Thompson Memorial Lecture.

Mr. W. M. Mordey (President-elect of the Association), in proposing the toast of "The Guests," said the Association felt highly honoured that they had as their guests that evening no fewer than three Presidents of the Institutions representing the chemical, electrical and mechanical engineering professions.

Dr. Hele-Shaw, in his reply on behalf of the guests, stated he was proud to be able to say he was one of the late Dr. Thompson's first pupils at Bristol University, and nothing gave him greater pleasure than to be at a gathering such as was assembled there that night.

Between the toasts a number of excellent musical items were given under the direction of Mr. L. M. Clark, A.I.C.

The President was supported by Mr. P. V. McMahon and Capt. Wallis-Jones (Past Presidents), Mr. A. J. Chapman (Vice-President) and Mr. J. A. Coste (member of Council).

It was announced that old students of Finsbury who are not yet members of the Association, may obtain application forms and full particulars of the Association from the Hon. Secretary, Mr. H. P. Guy, 74, Silver Street, Edmonton, London.

Unsuccessful Manufacture of "Westrumite"

THE affairs of Mr. Henry James Buckmaster, 26, Victoria Street, Westminster, London, S.W., who had been interested in the manufacture of a bituminous material called Westrumite (see THE CHEMICAL AGE, Vol. vii., p. 644), came before Mr. Registrar Hope, at the London Bankruptcy Court, on November 2, on the adjourned hearing of his application for an order of discharge. According to the trustee in bankruptcy, proofs of debt amounting in all to £180,312 were likely to be admitted to rank against the estate, while a total realisation of £1,221 was expected from assets which had been valued by the bankrupt at £35,592. In giving his judgment, his honour said that the report of the official receiver was complicated, and related to a heavy case. The official receiver had alleged that certain statutory offences against the Bankruptcy Act had been committed by the bankrupt, and these included bringing on bankruptcy by rash and hazardous speculations and unjustifiable extravagance in living and a charge of misconduct in relation to his affairs. It would seem clear that the bankrupt had lived beyond his income, although it might be that he would have found it difficult to have reduced his expenditure. He (the registrar) said all the facts as alleged in the official receiver's report would be upheld, and the discharge would be suspended for four years from the date on which the public examination was concluded.

Safeguarding of Industries Act

Complaints against Inclusion of Sodium Phosphate

THE Board of Trade have received a formal notice of complaint under Section 1, Sub-section (5) of the Safeguarding of Industries Act, that "Sodium Phosphate, mono-; R. Sodium Phosphate, di-; and Sodium Phosphate, tri-*" have been improperly included in the lists of articles chargeable with duty under Part I of the Act.

The Board have, in addition, received a complaint in respect of "Sodium Phosphate," and the complainants inform the Board that they intend their complaint to cover, in addition to the three items indicated in the preceding paragraph, other listed items such as "Sodium Pyrophosphate." This complaint is outside the precise terms of the Board of Trade list, and the Board will contend that the only valid complaints under Section 1 (5) which they have received in this connection are in respect of "Sodium Phosphate, mono-, Sodium Phosphate, di-, and Sodium Phosphate, tri-."

The complaint will be submitted in due course to the Referee appointed by the Lord Chancellor for the purposes of the sub-section, and any person interested should communicate immediately with the Assistant Secretary, Board of Trade, Great George Street, London, S.W.1.

Oxalic Acid Case Postponed

The Board of Trade have been notified by the Referee appointed for the purposes of Section 1, Sub-section (5), that at the request of Messrs. Stephenson, Harwood and Tatham (acting for the complainants, The Chemical Merchants and Users' National Vigilance Committee) he has postponed the Oxalic Acid hearing which he originally fixed for November 4, to to-day (Saturday).

Use of Fertilisers

Value of Potash Compounds in Agriculture

IN addressing the Goudhurst Branch of the Kent Farmers' Union on Tuesday, Mr. G. A. Cowie, F.I.C., stated that the cost of production would determine more than ever in the future the question whether farming was to be remunerative. Farmers, however, had to distinguish between genuine economy and false economy, such as cutting out some important process in crop production—*e.g.*, the use of fertilisers.

Fertilisers, where properly used, were really an important factor in cheapening production, because they generally led to profitable increases in crop yield, and thus brought about a reduction in the all-round cost of production per ton or per quarter whatever the case may be. One of the ways in which the Government could be of real service to agriculture in its present difficulties, would be to establish a sound system of credit banks, which would enable farmers to purchase their fertilisers and seeds, etc., on a reasonably low credit basis. The land in this country was already in a relatively low productive state, chiefly due to the one-sided and exhaustive manuring practised during the war, and it would be a national calamity if a shortage of money were to prevent farmers from maintaining the use of fertilisers, and thus cause the land to get into an even worse condition.

Referring to the manurial treatment of different crops, the speaker said that temporary leys would repay increased attention. A good clover plant played an important part in the economy of the farm, as it exerted a beneficial influence on practically every crop in the rotation. In many cases the proper plant food was not present to ensure the full development of the clover plant. A sound treatment for the young "seeds" in the autumn or winter was a dressing of both phosphates and potash unless one could rely on an effective residue of one or other or both of these constituents from previous applications in the rotation. On poor and especially light soils both constituents would be necessary to give the best results. Similar treatment would answer well on permanent meadow grass cut for hay.

In regard to hops the value of the mineral manures, phosphates and potash, was often not adequately appreciated. On heavy soils phosphates were more important, and on light soils potash was more necessary, but where dung was scarce an application of both constituents would often ensure a much more profitable utilisation of the nitrogeneous manures used.

* The prefix R was added to the item "Sodium Phosphate-tri" on April 6, 1922.

From Week to Week

DAMAGE estimated at nearly £500 was caused by fire at the North Wales Margarine Works, Aber.

A DIRECTORY for the British glass industry is being compiled under the auspices of the Society of Glass Technology.

THE MARQUESS OF CREWE has accepted the invitation of the British Science Guild to succeed Lord Montagu of Beaulieu as president of the Guild.

SIR JOHN RUNTZ, who died at Tunnel House, near Watford, on November 4, in his eighty-first year, was chairman of the Gas Purification and Chemical Co., Ltd.

A CONFERENCE on the teaching of science in schools and colleges will be held at University College, London, on November 25. Sir William Tilden will be among the speakers.

UNDER THE WILL of the late Sir William Dunn a further sum of £45,000 has accrued to the School of Biochemistry at Cambridge University. The total grant is thus brought up to £210,000.

MR. ROBERT EDWARD BELL, of Castlehyrst, Castlemain Avenue, Southbourne, who died on November 1, after a long illness, was managing director of R. Bell and Co., Ltd., match manufacturers.

CONSIDERABLE DAMAGE has been caused by a fire, the origin of which is unknown, at the premises of Foster, Mason and Harvey, Ltd., paint manufacturers, 26, Grange Road, Bermondsey, London.

EFFORTS are being made to pass a law limiting the importation of chemicals into Russia, in order, it is stated, to develop inland production, and to safeguard the existence of the Russian chemical industry.

AMONG the exhibitors at the Brewers' Exhibition were the Graesser-Monsanto Chemical Works, Ltd., the British Saccharin Manufacturing Co., Ltd., William Reeves and Co., and the Saccharin Corporation, Ltd.

THE CLAIM of Major G. W. Ellis in respect of a fat extraction plant, referred to in THE CHEMICAL AGE last week, was further investigated by the Royal Commission on Awards to Inventors on Wednesday, but the hearing was adjourned.

M. PAUL KESTNER, speaking at the International Congress on Liquid Fuels, held in Paris recently, emphasised the importance of finding in France substitutes for the liquid fuel that the country is at present obliged to import.

IN CONNECTION with the national campaign for destroying rats during the current week, leaflets were distributed by the Ministry of Agriculture recommending red squill, barium carbonate, and phosphorus as the most effective poisons.

ACCORDING to the Swedish Economic Review for the third quarter of the year, the Swedish cement industry found an extended market in the United States, while production of calcium carbide on hydro-electric lines recently witnessed an important increase, two of the largest factories having resumed work.

THE DIRECTORS of the Mond Nickel Co., Ltd., announce that the following additional directors have been appointed:—Mr. D. Owen Evans; Mr. Carl Langer, Junior; Mr. Henry L. Mond; Mr. Philip Mond. Mr. D. Owen Evans, who is now secretary of the company, will continue to act in that capacity for the time being.

AMONG appointments to the staff announced by the Council of Leeds University are:—Mr. J. C. Mann, assistant lecturer in agricultural chemistry; Mr. W. A. Wightman, demonstrator in organic chemistry; Mr. Thomas Henderson, demonstrator in inorganic chemistry; and Mr. A. C. Monkhouse, research assistant in the fuel industries department.

DUTY-FREE articles imported into the United Kingdom from Germany during September show an increase over the preceding month of £20,399. A further increase is recorded against finished dyestuffs obtained from coal tar, the September total being £10,837 more than the August figure. A decrease of £2,969 is noted in the imports of scientific instruments.

A BOOM in the German potash industry is reported by a correspondent of the Exchange Telegraph Co. According to this message sales up to the end of September totalled 1,000,000 metric tons of fine potash, against 6,200,000 tons in the same period of 1921. Exports in 1922 are estimated, by the Potash Syndicate, at 1,250,000 tons, as against 1,100,000 tons in 1913.

A GENERAL MEETING of the members of the Royal Institution was held on Monday, Sir James Crichton-Browne in the chair. Viscount Falmouth, Dr. Michael Grabham, and Mr. N. Miesegaes were elected members. The Chairman reported the deaths of Colonel E. H. Grove-Hills, secretary and vice-president; and of Lord Scott Dickson, and resolutions of condolence were passed.

SIR JOHN T. CARGILL has been elected to fill the vacancy on the board of Scottish Oils, Ltd., created by the resignation of Sir Frederick W. Black. At the same time, Sir Charles Greenway has resigned the chairmanship in favour of Sir John T. Cargill, who, being resident in Glasgow, can more conveniently fulfil the duties connected with the post. Sir Charles Greenway still retains his seat on the board of Scottish Oils, Ltd., which is controlled by the Anglo-Persian Oil Co.

IT IS ANNOUNCED that Sir Arthur Acland has resigned the chairmanship of the Executive Committee of the governing body of the Imperial College of Science and Technology, and has been succeeded in that office by Mr. Herbert Wright. Sir Arthur Acland, who was appointed to the governing body by the President of the Board of Education on the incorporation of the Imperial College in 1907, has been chairman of the Executive Committee for the past eight years, and for the previous seven years was chairman of the College Education Committee.

IN VIEW of the retirement of Professor H. B. Dixon from the chair of chemistry at Manchester, a committee has been formed to raise a fund in recognition of his thirty-five years of distinguished service. The fund will be devoted mainly to the provision of grants to enable chemistry students to complete their courses, but it is also intended to set up a bust of Professor Dixon. Subscriptions are receivable at the University by Dr. Norman Smith. As previously announced, a complimentary dinner, full particulars of which are obtainable from Dr. J. E. Myles, will be held on December 8.

THE FOLLOWING is a list of those recommended by the President and Council of the Royal Society for election to the Council at the anniversary meeting on November 30:—President, Sir Charles Sherrington; secretaries, Mr. W. B. Hardy and Mr. J. H. Jeans; treasurer, Sir David Prain; foreign secretary, Sir Arthur Schuster. Other members of Council—Professor V. H. Blackman, Professor H. C. H. Carpenter, Professor T. R. Elliott, Sir Sidney Harmer, Professor A. Hardon, Professor W. M. Hicks, Professor H. F. Newall, Professor G. H. F. Nuttall, Professor D. Noel Paton, Lord Rayleigh, Professor O. W. Richardson, Sir Ernest Rutherford, Dr. Alexander Scott, Mr. F. E. Smith, Sir Aubrey Strahan, and Professor J. T. Wilson.

ACCORDING to Aikman (London), Ltd., important discussions are now taking place in Berlin with a view to devising some scheme by which the necessary finance can be obtained to import under Government control about 200,000 tons of Chilean nitrate into Germany in time for the coming season. The collapse in the German exchange has induced the study of any means by which the large quantities of grain purchased abroad can be reduced, and the Prussian Minister of Agriculture has devised a plan by which agriculturists will be paid in the form of Chilean nitrate for part of the crops delivered by them to their Government. The quantity of nitrate required for this purpose in Germany was estimated at 1,000,000 tons, and it is hoped that some means of financing the 200,000 tons now under discussion will be found.

IN THE COURSE of a paper on "Recent Developments in the Plantation Rubber Industry," read at a meeting of the Institution of Rubber Industry on Monday, Dr. H. P. Stevens dealt with the various methods of tapping and the changes and improvements made in gathering the latex, and the preparation of the rubber for the market. In regard to packing and transport, he said great care was now taken to see that the rubber was thoroughly dry before packing. In spite of every precaution, sheet rubber frequently showed some traces of mould on arrival in Europe. The planter had many difficulties to contend with in shipping a product with appreciable hygroscopic properties in a climate in which the air was often saturated with moisture. It had been shown that crepe hung to air-dry might actually absorb water and increase in weight during the night. That tendency was more pronounced with sheet rubber, which retained more of the water soluble organic substances normally present in the latex, and which were washed out in the manufacture of crepe.

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REACTIONS.—The action of formaldehyde on pyrrolidine and piperidine. N. J. Putochin. *Ber.*, September 16, 1922, pp. 2749–2753.

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Patent Literature

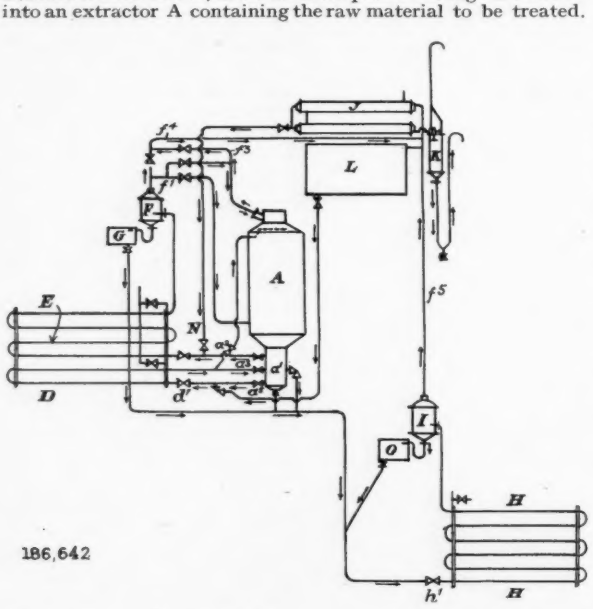
Abstracts of Complete Specifications

186,635. Chromium Compounds of Azo Dyestuffs. Soc. of Chemical Industry in Basle, Switzerland, and F. Straub, 587, Grenzacherstrasse, Basle, Switzerland. Application date, March 18, 1921. Addition to 104,045.

Specification No. 104,045 describes the treatment of azo dyestuffs with a hot alkaline chromite to produce the corresponding chromium compounds. In the present invention the dyestuff in aqueous solution is treated with complex chromium compounds obtained by the action of alkaline suspensoids of chromium hydroxide on organic compounds containing more than one hydroxyl group, such as polyhydric alcohols and phenols, tanning agents, sugars, degradation products from cellulose, tannin, gallic acid, phloroglucinol, etc. In an example, an aqueous paste of chromium hydroxide is mixed with caustic potash at a temperature below 70° C., and glycerine is then added. The mixture is heated to boiling until the chromium hydroxide is dissolved. This mixture is then added to the dyestuff from diazotised 1-amino-2-oxynaphthalene-4-sulphonic acid and α-naphthol. The dyestuff dissolves to a dark blue solution which is boiled for some time, diluted with water, and then neutralised with mineral acid. The chromium dyestuff is salted out, filtered and dried; it dyes wool deep blue in an acid bath. Other examples are given in which a violet dye is obtained from diazotised 1-oxy-2-amino-4-methylbenzene-6-sulphonic acid and β-naphthol, and a red dye from diazotised 1-oxybenzene-2-amino-4-chloro-6-sulphonic acid and 1-phenyl-3-methyl-5-pyrazolone, with organic chromium compounds as above. The organic chromium compounds described have the advantage that they can be boiled for a long time without decomposition, unlike the alkali chromites, and quantitative yields of the chromium dyestuffs are obtained without any excess of alkali.

186,642. Extraction of Oils, Fats, Waxes, and the Like, Method of and Plant or Apparatus for. J. A. Reavell, 28, Oakwood Avenue, Beckenham, Kent, and Kestner Evaporator and Engineering Co., Ltd., 5, Grosvenor Gardens, London, S.W.1. Application date, April 1, 1921.

The solvent passes from a reservoir L through a valve d^1 to a steam-heated coil D, from which it passes through a valve a^3 into an extractor A containing the raw material to be treated.



The solvent may alternatively be passed through a valve a^2 to the top of the extractor. The valves a^2, a^5 are then opened to allow circulation from the extractor A to the heater D. The oil is then diverted through the evaporator E, which is heated by steam, and the vapour carrying oil in suspension passes to a separator F, from which the extracted oil passes to a tank G. The vapour passes through a pipe f^1 to the top of the extractor A, in which the vapour is condensed, and the condensed solvent collects in the chamber a^1. The vapour may alternatively be admitted to the bottom of the extractor, and thence through the pipes f^3, f^4 to a condenser J, from which the liquid may be returned to the system through the pipe N. When circulation is completed, the condensate passes to a separator K, where it is freed from water. The mixture of oil, solvent and water is then transferred through a valve h^1 to a still H, and the water and solvent vapour pass from the still to a separator I, where oil in suspension is removed and then collected in a tank O. The vapour passes through a pipe f^5 to the condenser J and separator K, from which the solvent returns to separator L. The extracted oil may be circulated again through the still H, separator I, and tank O.

186,693. Crushing or Reducing Minerals, Ores and Other Materials. W. E. Bleloch, Transvaal Bank Buildings, Johannesburg, South Africa, and H. A. Stockman, 2, Princes Street, Troyeville, Johannesburg, South Africa. Application dates, July 1, 1921, and February 7, 1922.

This machine is of the kind in which the material is crushed between a stationary block and a pivoted reciprocating member, which is actuated by a percussion device at the rear. The space between the crushing members is varied by adjusting the stationary block, and each crushing member may be combined with more than one reciprocating member. The latter may reciprocate between two opposed stationary members to obtain a double-acting apparatus. The reciprocating members may be actuated by a pressure fluid such as steam or compressed air.

186,738. Desulphurising Petroleum and Similar Oil. W. R. Walkey, 55, Victoria Street, London, S.W.1, and A. F. Bargate, 20, Lawrence Lane, London, E.C.2. Application date, July 18, 1921.

The oil is vaporised and its sulphur content converted into sulphuretted hydrogen, which is then treated with steam and a gaseous dissociating agent such as chlorine or sulphur dioxide. The sulphuretted hydrogen is thereby decomposed without the formation of organic sulphides. It is found that the decomposition of the sulphuretted hydrogen is facilitated by mixing the gases while under the action of a magnetic field. The vaporised oil may be passed into one end of a reaction tube into which jets of steam and the dissociating gas are injected. The tube may be packed with firebrick or pumice, and covered with insulating material to maintain the temperature at 300°–400° F. It is found that the sulphur is mainly deposited as free sulphur, from which the oil may be separated. The magnetic field may be obtained by means of a coil around the reaction tube.

186,760. Flotation Processes for Concentrating Ores and the Like. A. C. Vivian, 32, Castleton Mansions, Riverview Gardens, Barnes, London, S.W. Application date, August 5, 1921.

The process is for treating ores, concentrates, metallurgical products, etc., containing oxygen compounds of metals. The ore is mixed with a small proportion of organic compounds which are generally considered weakly acid but are amphoteric or display aci-pseudo forms, contain nitrogen and oxygen, and interact with the metal compounds to form complex resinous substances. These substances facilitate the flotation of the metals either with or without known frothing agents. Suitable substances are usually those of a high molecular weight, preferably cyclic compounds, and some unsaturated chain compounds. Examples are given of amido acids, such as taurocholic acid, cupferron (*i.e.*, the ammonium salt of nitroso-phenyl-hydroxylamine), phenyl glyoxime and dinitroso resorcinol. These reagents usually combine with constituents of the ore (*e.g.*, oxide or cassiterite), but in some cases the addition of an oxidising agent such as oxygen may be necessary. In an example, tin ore is ground with water containing the

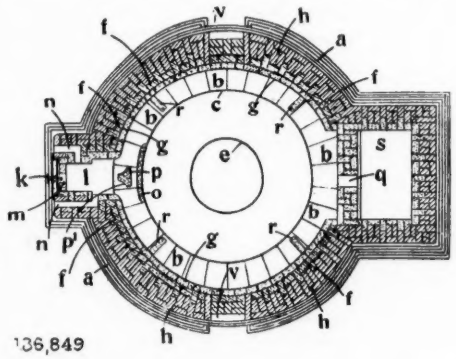
sodium salt of phenyl glyoxime in the proportion of 0·1 lb. per ton of dry ore. This mixture is then concentrated by using phenolic or wood tar as a frothing agent, and a yield of 91 per cent. is obtained. Other examples are given of the treatment of a vanadium mineral using cupferron and phenolic and wood tar as a frothing agent, and also the treatment of lead ore containing lead and calcium carbonates using the sodium salt of taurocholic acid as a frothing agent. In the latter case, fatty acid could not be used owing to the presence of calcium carbonate.

186,840. HYDROGEN PEROXIDE, PRODUCTION OF. Woodlands, Ltd., Charlton Green, Dover. From J. Pátek, Bruska 285 Prag-IV, Czecho-Slovakia. Application date, October 12, 1921.

In commercial processes for the distillation of solutions which yield hydrogen peroxide, it is found that when distillation takes place on the heated walls of the vessel, the roughness of these walls causes decomposition of the hydrogen peroxide. In the present invention this difficulty is avoided by distilling the solution in contact with the surface of a liquid or a fused salt such as sulphuric acid or fused sodium bisulphate. The solution treated may be crude hydrogen peroxide, persulphuric acid, sodium, potassium or ammonium persulphate, inorganic peroxides, or other substance which yields hydrogen peroxide on heating. The sulphuric acid or bisulphate is heated to a temperature above the boiling point of the hydrogen peroxide solution, and the latter is sprayed on to the liquid surface. The vapour is passed immediately to the condenser, and the process enables the hydrogen peroxide to be separated immediately from the solution containing a catalyst.

186,849.—SETTINGS FOR STILLS AND FOR SIMILAR PURPOSES. P. Mather, 23, Great Winchester Street, London, E.C. Application date, November 1, 1921.

The "setting" is more particularly adapted for supplying heat in regulable amount to various zones of a vertical still, of which the illustration shows a horizontal section. The setting *a* is provided with a number of horizontal annular flues *b*, which completely surround the still casing *c*. A layer of infusorial earth *f* is interposed between the firebrick *g* and



186,849

outer brickwork *h*. Each flue *b* is separated from those above and below by horizontal partitions. Each flue is provided with burners *k* for liquid fuel or gas, which project into a combustion chamber *l* arranged radially with respect to the flue *b*. Passages *n* are provided on each side of the chamber *l* to admit air at different points, and ensure complete combustion. A layer of firebrick *o* and a deflector *p* may be provided to prevent the impact of the hot gases on the wall of the still and to deflect these gases on both sides of the flue. Radial baffles *r* may be provided to deflect the hot gases. All the flues *b* discharge into a common vertical uptake *s*.

186,855. CLAY, TREATMENT OF. W. Feldenheimer, 20, Holborn Viaduct, London, E.C.1, and W. W. Plowman, 83, St. Leonard's Road, East Sheen, Surrey. Application date, November 21, 1921. Addition to 184,271.

Clay may be purified by suspending it in a liquid medium by the aid of a peptising agent, separating the impurities, and then precipitating the clay by adding a flocculating reagent. It is found that some clays cannot be treated with the usual peptising agents, while others require a concentration of the peptising agent between very narrow limits. In Specification No. 184,271 (see THE CHEMICAL AGE, Vol. VII., p. 391), meta-phosphoric acid is described as a peptising agent for some of these clays. It is now found that pyrophosphoric acid or a dilute alkali pyrophosphate may be used as an alternative. Examples are given of the treatment of several different varieties of clay by the use of sodium pyrophosphate as a peptising agent.

186,859. β-THIONAPHTHISATIN, MANUFACTURE OF. O. Y. Imray, London. From Soc. of Chemical Industry in Basle, Switzerland. Application date, December 1, 1921.

A mixture of β-thionaphthol and excess of oxalyl chloride is stirred and then heated to boiling point of the latter to distil off the excess. The mixture is then heated to a higher temperature and the β-thionaphthisatin produced is extracted by a solution of sodium carbonate, and finally precipitated by adding hydrochloric acid. The reaction may also be effected in the presence of a diluent or condensing agent such as carbon bisulphide or sulphuric acid. The β-thionaphthisatin is a dyestuff intermediate.

186,871. HYDROGEN PEROXIDE, METHOD OF PRODUCING SOLUTIONS CONTAINING. Deutsche Gold- & Silber-Scheideanstalt vorm. Roessler and O. Liebknecht. Weissfrauenstrasse, 7-9, Frankfurt-on-Main, Germany. Application date, February 16, 1922.

In the production of hydrogen peroxide by treating sodium or barium peroxide with sulphuric acid, it is impossible to obtain a solution of more than 10 per cent. strength in one operation owing to the difficulty of agitation due to the precipitated salts. Stronger solutions have only been obtained by introducing the super-oxide into the acid in stages and filtering at each stage or by concentrating the dilute hydrogen peroxide by distillation. It is now found that sodium perborate may be treated with concentrated sulphuric acid to give a yield of 20 per cent. hydrogen peroxide in one operation. The presence of precipitated boric acid with the sodium sulphate facilitates the agitation of the mixture. The boric acid may be reconverted into borate and perborate for use again. The sulphuric acid used should be of a strength of not less than 180 grams per litre, or equivalents of hydrochloric or phosphoric acid may be used. Alternatively the concentrated acid may act upon a suspension of perborate in water, in which no decomposition of the alkaline hydrogen peroxide solution occurs.

186,878. NEW INTERMEDIATES FOR THE PRODUCTION OF COLOURING MATTERS, MANUFACTURE OF. British Dyestuffs Corporation, Ltd., Imperial House, Kingsway, London, W.C.2, A. G. Green, K. H. Saunders, and E. B. Adams, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, August 30, 1921.

Specification No. 181,750 (see THE CHEMICAL AGE, Vol. VII., p. 130) describes a new series of intermediates and acid dyeing colouring matters containing the sulphato-ethyl group ($C_2H_4.SO_4H$), the sulphato propyl group ($C_3H_6.SO_4H$), or the sulphato butyl group ($C_4H_8.SO_4H$) attached to nitrogen. These are produced by condensing ethylene or other chlorhydrin with amido bodies to obtain the corresponding oxyethyl or other compounds and then treating these with sulphuric acid. In the present invention, oxyalkyl-aryl-amines, oxyalkyl-alkyl-aryl-amines, *m*-hydroxy-oxyalkyl-aryl-amines, or *m*-hydroxy-oxyalkyl-alkyl-aryl-amine are treated with nitrous acid, and in the case of the secondary amines the nitrosamine is transformed with hydrochloric acid to yield new nitroso derivatives. These may be condensed with a hydroxy body to produce oxazines or with another amino body to produce an intermediate indamine for conversion into an azine. New oxyalkylated thiosulphonic acids may be obtained by reducing the nitroso derivatives of oxyalkyl-aryl-amines or oxyalkyl-alkyl-aryl amines and treating with sodium thiosulphate for the manufacture of thiazines. Examples are given.

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 160,840 (G. Schicht Akt.-Ges. and A. Grun), relating to the manufacture of nutritious fats, see Vol. IV., p. 627; 166,129 (Akt.-Ges. Kummler and Matter), relating to prevention of corrosion in evaporating and distilling apparatus, see Vol. V.,

p. 316; 167,464 (Manufactures de Produits Chimiques du Nord Etablissements Kuhlmann), relating to mechanically operated furnaces for roasting pyrites and like ores, see Vol. V., p. 436.

International Specifications not yet Accepted

185,728. SYNTHETIC DRUGS. Etablissements Poulenc Frères, 92, Rue Vieille-du-Temple, Paris. (Assignees of R. Meyer, Quai de Port à l'Anglais, Vitry-sur-Seine, France.) International Convention date, September 7, 1921.

To obtain aminophenylarsinic acids and substitution products, the corresponding nitro compounds are reduced with a reducing sugar such as glucose or molasses, in alkaline solution. Compounds such as *o*-, *m*-, and *p*-nitrophenyl-arsinic acids or their substitution products, or nitro-oxy or nitroaminophenyl-arsinic acids may be treated in this manner.

185,729. FERTILISERS. J. Gradl, Munich, Germany. International Convention date, September 3, 1921. Addition to 184,800.

Specification 184,800 describes a process for making fertilisers by carbonising finely divided organic materials and mixing with catalysts and/or oxidising agents. In this invention, the organic material, which may be peat, lignite, wood-flour or algae, is not carbonised, and the catalyst and oxidising agent may be added during comminution of the organic material. Potash salts and phosphates may also be added. Examples are given in which the fertiliser consists of (1) peat and braunite, (2) peat and ammonium nitrate, (3) peat, sodium nitrate and braunite, (4) peat, ammonium nitrate and raw phosphate.

185,745. IRON ALLOYS. Elektrizitätswerk Lonza, Basle, Switzerland. International Convention date, September 10, 1921.

Alloys of iron with silicon, chromium or tungsten are obtained by adding the corresponding ore or oxide and a reducing agent to a bath of molten iron. Suitable reducing agents are aluminium, calcium, silicon-calcium, or silicon-aluminium.

185,749. EXTRACTING METALS. Elektrizitätswerk Lonza, Basle, Switzerland. International Convention date, September 10, 1921.

Silicon-calcium alloy is mixed with a binder such as water-glass, lime, cement or clay, and pressed or briquetted for use as a reducing agent in metallurgical processes. Manganese ore may be included to obtain the addition of manganese to a metal bath, or aluminium to increase the reducing action and facilitate slag formation.

185,757. ALKYL HYDROGEN SULPHATES. Frabnfabrikene vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. International Convention date, September 9, 1921.

Ethylene or its homologues may be absorbed in sulphuric acid with the aid of colloidal silver or a salt or complex silver compound as a catalyst. A substance which forms a froth or emulsion with sulphuric acid is also added, such as olive oil, castor oil, rape seed oil, turkey red oil, chloroform, carbon tetrachloride, tetralin, carbon disulphide, or stearic acid.

LATEST NOTIFICATIONS.

187,912. Manufacture of cellulose products from viscose solutions. Glanzfäden Akt.-Ges. October 27, 1921.

187,943. Method of casting oxidisable metals. Chemische Fabrik Griesheim-Elektron. October 27, 1921.

187,944. Motor fuels. Chemical Research Syndicate, Ltd. October 27, 1921.

187,964. Treatment of cellulose derivatives. Dr. R. Clavel. October 27, 1921.

Specifications Accepted, with Date of Application

166,541. Hydrogen, Apparatus for purifying. Deutsche Glühfadenfabrik, R. Kurtz and P. Schwarzkopf Ges. July 13, 1920.

172,958. Nitrogen-carbonic-acid mixture from combustion gases Process and apparatus for the manufacture of pure. G. Scheib and M. Koch. December 14, 1920.

187,259. Filtering apparatus. W. Paterson. April 26, 1921.

187,263. Destructive distillation of coal and like carbonaceous materials. F. J. West, F. West, H. D. Madden, F. Boardman and West's Gas Improvement Co., Ltd. February 10, 1922.

187,296. Ore concentrator tables. E. C. R. Marks. (*E.I. Du Pont de Nemours & Co.*) July 12, 1921.

187,313. Metallic lead from lead sulphate, Process for the production of. F. E. Elmore and Chemical and Metallurgical Corporation, Ltd. July 14, 1921.

187,320. Continuous drying of pulverulent or granular materials, applicable to the manufacture of neutral ammonium sulphate. J. Marr and Coke Oven Construction Co., Ltd. (in liquidation). July 16, 1921.

187,335. Alcohol fuels. S. W. Blake. July 19, 1921.

187,336. Coal, Carbonisation of. J. Roberts. July 20, 1921.

187,347. Ether, Apparatus for making. H. Wade. (*F. E. Lichtenthaeler.*) July 27, 1921.

187,375. Metal oxides, Process for the reduction of—by means of aluminium in the furnace. P. C. Rushen. (*Akt.-Ges. B. Felder-Clement.*) August 13, 1921.

187,381. Separating fine material, Method of and apparatus for. G. Roth. August 15, 1921.

187,423. Fertiliser and process of making same. E. H. Sams. September 14, 1921.

187,429. Washing material which has been separated by centrifugal action, Apparatus for. Chemische Fabrik Griesheim-Elektron and F. Sander. September 24, 1921.

Applications for Patents

Appareils et Evaporateurs Kestner. Process of extracting sodaic salts from bicarbonated mineral waters. 30,103. November 3. (Belgium, November 5, 1921.)

Babcock & Wilcox, Ltd. Liquid-fuel spraying-devices. 30,222. November 4.

British Aluminium Co., Ltd., and Gwyer, A. G. C. Aluminium alloys. 29,785. October 31.

Fowler, G. J., and Subrahmaniam, V. S. Production of acetic acid from alcohol. 29,625. October 30.

Gerber, V. Process for dissociation of aluminiferous substances in combination with fixation of nitrogen. 30,133. November 3.

Kinzlberger & Co. Preparation of iron-free chromium compounds. 30,132. November 3. (Czecho-Slovakia, November 4, 1921.)

Knapp, W., and Levin, E. M. Obtaining high-grade carbohydrates from waste fats, etc. 29,972. November 2.

Levy, L. A. Process for dyeing artificial filaments. 30,135. November 3.

Levy, L. A. Manufacture of cellulose acetate. 30,136. November 3.

Loriette, P. Production of liquid-fuel mixtures with alcohol as basis. 30,106. November 3. (France, November 3, 1921.)

Meyer, E. A., and Distillers Co., Ltd. Dehydrating alcohol. 30,143. November 3.

Nitrogen Corporation. Ammonia synthesis autoclave. 29,791. October 31. (United States, November 9, 1921.)

Nitrogen Corporation. Drying gases. 29,792. October 31. (United States, November 9, 1921.

Ricard, Allenet, et Cie. Manufacture of butyl chlorides. 30,021. November 2. (France, December 28, 1921.)

Schidrowitz, P. Manufacture of paper, etc. 29,885. November 1.

Soc. Anon. dite Progil. Mordant for dyeing animal fibres. 30,027. November 2. (France, August 30.)

Spensley, J. W., and Chemical Engineering Co. (Manchester), Ltd. Processes for producing intimate mixtures of substances and obtaining chemical products therefrom. 29,728. October 31.

Techno-Chemical Laboratories, Ltd., and Testrup, N. Separating solids from liquids. 30,014. November 2.

The Manufacture of Cold Water Glue

THE first meeting of the creditors of Mr. William Noble, formerly carrying on business at 7, Baldwin's Place, Gray's Inn Road, and residing at 225, Beckenham Road, Penge, S.E., was held at Bankruptcy Buildings, Carey Street, London, W.C., on October 31. The receiving order was made on October 13 last. It appeared that in 1916 the debtor had purchased a secret formula for the manufacture of cold water glue, and with the knowledge of his employers he started on his own account at 7, Baldwin's Place, London, under the name of The Col-wa-glue Co., with about £1,500 capital, which he put into the business and had since added thereto from his income from the company by whom he was employed. It was some two years before he was able to put the glue on the market The business was going well just before the Armistice, and he then had several Government orders cancelled. He had since been unable to make it a financial success, and he sold the process in April last to a company which was formed with a capital of £5,250. As vendor he received £1,000 in cash and 800 or 900 1s. shares. He paid away the £1,000 to trade creditors, and for rent. His liabilities were mostly in respect of the glue business, and amounted to about £4,500. His assets consisted of £2 in cash, and shares of uncertain value. He attributed his failure to cancellation of orders, loss of contracts, and inability to make a commercial success of cold water glue. The estate remains in the hands of the Official Receiver.

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.*

LONDON, NOVEMBER 9, 1922.

THERE has been a decided improvement in the home trade during the past week, and the outlook is fairly healthy. The general trend of prices is upwards.

The export position is without special feature.

General Chemicals

ACETONE is again higher in price, with little offering.
ACID ACETIC is in active demand. Price is firm.
ACID CITRIC is uninteresting.
ACID FORMIC.—The improved demand is maintained, and the elimination of second-hand parcels is likely to make the price tend upwards.
ACID LACTIC remains unchanged.
ACID OXALIC has been in much better demand, but is without change in value.
ACID TARTARIC is almost unsaleable, and prices indicated in second-hands appear to represent the intrinsic value of the article.
BARIUM CHLORIDE is still in short supply, and price for forward delivery is rather lower.
COPPER SULPHATE is unchanged.
CREAM OF TARTAR is a better market, and the second-hand offering is now very much restricted.
FORMALDEHYDE is again dearer in price, and a further advance is expected.
LEAD ACETATE is slowly rising in value, and the improved demand is maintained.
LEAD NITRATE remains unchanged.
LITHOPONE is firmer, and the higher grades are in short supply.
POTASSIUM CARBONATE is freely offered, and the tendency favours buyers.
POTASSIUM CAUSTIC is weak and uninteresting.
POTASSIUM PERMANGANATE is in firm demand, price unchanged.
SODIUM ACETATE is very scarce indeed, and makers are well sold for the next six months.
SODIUM BICHROMATE is unchanged.
SODIUM HYPOSULPHITE.—The demand is rather better. Values are unaltered.
SODIUM PRUSSIATE is an active market, with makers well sold ahead.
ZINC OXIDE.—Higher grades are very scarce, and with the upward tendency of spelter a further advance in prices is expected.

Coal Tar Intermediates

There is no material change to report in the situation this week.

ALPHANAPHTHOL.—Steady at last quoted value.
ALPHANAPHTHYLAMINE is firm with steady home inquiry in the market.
ANILINE OIL is without change and continues to pass regularly into consumption.
BENZIDINE BASE is firm at last price with some home orders in the market.
BETANAPHTHOL is without special feature.
DIANISIDINE continues in short supply.
DIMETHYLANILINE is a quiet market.
DIPHENYLAMINE is firm.
"G." SALT.—Little inquiry is about.
"H." ACID is slightly easier.
METADINITROBENZOL.—Some orders have been placed.
METAPHENYLENEDIAMINE is in steady demand.
PARAPHENYLENEDIAMINE.—Some export business is moving.
"R." SALT has been inquired for on home account.
RESORCIN continues in short supply at current value.

Coal Tar Products

The market is firm, and a very fair demand exists for most articles, with the possible exception of naphthas.

90's BENZOL is steady at 1s. 9d. per gallon in the North and 1s. 11d. to 2s. in London.
PURE BENZOL has a very moderate inquiry and is worth 2s. per gallon in the North and 2s. 3d. to 2s. 4d. in the South.
CREOSOTE OIL has a good demand and is worth 6d. to 6¼d. per gallon in the North and 7d. to 7½d. in London.
CRESYLIC ACID is steady at about 2s. 1d. to 2s. 2d. per gallon at works for the pale quality, 97-99 per cent., while the dark, 95-97 per cent., is worth about 1s. 10d. to 1s. 11d. per gallon.
SOLVENT NAPHTHA is easy, and is worth about 1s. 8d. in the North and 1s. 10d. to 1s. 11d. per gallon in London.
HEAVY NAPHTHA is uninteresting and is worth about 1s. 6d. to 1s. 7d. per gallon on rails.
NAPHTHALENE.—The improved inquiry for the crude qualities is maintained and prices have an upward tendency. The lower grades are worth from £7 to £8 per ton, while hot pressed naphthalene is worth about £9 per ton.
PITCH.—The upward movement of the market continues and as high as 125s. f.o.b. London and 122s. 6d. f.o.b. East Coast has been paid. There is some fear that the recent decline in the value of the franc will affect Continental business, but, as stocks are small, this is not causing any anxiety in regard to this year's deliveries.

Sulphate of Ammonia

Remains without change.

Current Prices

Chemicals

	Per	£	s.	d.		£	s.	d.
Acetic anhydride	lb.	0	1	8	to	0	1	10
Acetone oil	ton	80	0	0	to	82	10	0
Acetone, pure	ton	130	0	0	to	135	0	0
Acid, Acetic, glacial, 99–100%	ton	67	0	0	to	68	0	0
Acetic, 80% pure	ton	43	0	0	to	44	0	0
Arsenic, liquid, 2000 s.g.	ton	67	0	0	to	70	0	0
Boric, cryst.	ton	60	0	0	to	65	0	0
Carbolic, cryst. 39–40%	lb.	0	0	7	to	0	0	7½
Citric	lb.	0	1	9	to	0	1	10
Formic, 80%	ton	58	10	0	to	60	0	0
Gallic, pure	lb.	0	3	0	to	0	3	3
Hydrofluoric	lb.	0	0	7½	to	0	0	8½
Lactic, 50 vol.	ton	41	0	0	to	43	0	0
Lactic, 60 vol.	ton	43	0	0	to	44	0	0
Nitric, 80 Tw.	ton	27	0	0	to	29	0	0
Oxalic	lb.	0	0	7¼	to	0	0	7½
Phosphoric, 1.5	ton	40	0	0	to	42	0	0
Pyrogallic, cryst.	lb.	0	5	9	to	0	6	0
Salicylic, Technical	lb.	0	1	0	to	0	1	2
Salicylic, B.P.	lb.	0	1	4	to	0	1	5
Sulphuric, 92–93%	ton	6	10	0	to	7	10	0
Tannic, commercial	lb.	0	2	3	to	0	2	9
Tartaric	lb.	0	1	2½	to	0	1	3
Alum, lump	ton	10	0	0	to	10	10	0
Alum, chrome	ton	27	0	0	to	28	0	0
Alumino ferric	ton	9	0	0	to	9	5	0
Aluminium, sulphate, 14–15%	ton	10	10	0	to	11	0	0
Aluminium, sulphate, 17–18%	ton	11	10	0	to	12	0	0
Ammonia, anhydrous	lb.	0	1	6	to	0	1	8
Ammonia, .880	ton	33	0	0	to	35	0	0
Ammonia, .920	ton	21	0	0	to	23	0	0
Ammonia, carbonate	lb.	0	0	4	to	0	0	4½
Ammonia, chloride	ton	60	0	0	to	65	0	0
Ammonia, muriate (galvanisers)	ton	35	0	0	to	37	10	0
Ammonia, nitrate (pure)	ton	35	0	0	to	40	0	0
Ammonia, phosphate	ton	68	0	0	to	70	0	0
Ammonia, sulphocyanide	lb.	0	1	10	to	0	2	0

	Per	£	s.	d.		£	s.	d.
Amyl acetate	ton	175	0	0	to	185	0	0
Arsenic, white, powdered	ton	49	0	0	to	51	0	0
Barium, carbonate, 92–94%	ton	15	0	0	to	16	0	0
Barium, Chlorate	ton	65	0	0	to	70	0	0
Barium Chloride	ton	19	0	0	to	20	0	0
Nitrate	ton	27	10	0	to	30	0	0
Sulphate, blanc fixe, dry	ton	20	10	0	to	21	0	0
Sulphate, blanc fixe, pulp	ton	10	5	0	to	10	10	0
Sulphocyanide, 95%	lb.	0	1	0	to	0	1	3
Bleaching powder, 35–37%	ton	12	0	0	to		—	
Borax crystals	ton	29	0	0	to	33	0	0
Caffein	lb.	0	13	6	to	0	14	6
Calcium acetate, Brown	ton	10	10	0	to	11	10	0
„ „ Grey	ton	15	10	0	to	16	0	0
Calcium Carbide	ton	16	0	0	to	17	0	0
Chloride	ton	6	0	0	to		—	
Carbon bisulphide	ton	50	0	0	to	52	0	0
Casein technical	ton	47	0	0	to	55	0	0
Cerium oxalate	lb.	0	4	6	to	0	4	9
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	6	0	to	0	6	6
Oxide, black	lb	0	9	6	to	0	10	0
Copper chloride	lb.	0	1	2	to	0	1	3
Sulphate	ton	26	10	0	to	27	0	0
Cream Tartar, 98–100%	ton	100	0	0	to	102	0	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde, 40% vol.	ton	77	10	0	to	80	0	0
Formusol (Rongalite)	lb.	0	2	6	to	0	2	9
Glauber salts, commercial	ton	5	0	0	to	5	10	0
Glycerine, crude	ton	65	0	0	to	67	10	0
Hydrogen peroxide, 12 vols.	gal.	0	2	4	to	0	2	5
Iron perchloride	ton	30	0	0	to	32	0	0
Iron sulphate (Copperas)	ton	3	10	0	to	4	0	0
Lead acetate, white	ton	45	0	0	to	50	0	0
Carbonate (White Lead)	ton	42	0	0	to	47	0	0
Nitrate	ton	44	10	0	to	45	0	0
Litharge	ton	35	10	0	to	36	0	0
Lithopone, 30%	ton	23	10	0	to	24	0	0
Magnesium chloride	ton	5	10	0	to	6	0	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	7	10	0	to	8	0	0
Sulphate (Druggists')	ton	11	0	0	to	11	10	0
Manganese Borate, commercial	ton	65	0	0	to	75	0	0
Sulphate	ton	60	0	0	to	62	0	0
Methyl acetone	ton	70	0	0	to	75	0	0
Alcohol, 1% acetone	ton	80	0	0	to	85	0	0
Nickel sulphate, single salt	ton	49	0	0	to	51	0	0
Ammonium sulphate, double salt	ton	51	0	0	to	52	0	0
Potash, Caustic	ton	32	0	0	to	33	0	0
Potassium bichromate	lb.	0	0	6	to		—	
Carbonate, 90%	ton	31	0	0	to	33	0	0
Chloride, 80%	ton	12	0	0	to	12	10	0
Chlorate	lb.	0	0	4½	to	0	0	5
Metabisulphite, 50–52%	ton	84	0	0	to	90	0	0
Nitrate, refined	ton	43	0	0	to	45	0	0
Permanganate	lb.	0	0	8½	to	0	0	9
Prussiate, red	lb.	0	4	6	to	0	4	9
Prussiate, yellow	lb.	0	1	7	to	0	1	8
Sulphate, 90%	ton	13	0	0	to	13	10	0
Salammoniac, firsts	cwt.	3	3	0	to		—	
Seconds	cwt.	3	0	0	to		—	
Sodium acetate	ton	24	10	0	to	24	15	0
Arseniate, 45%	ton	45	0	0	to	48	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	4½	to		—	
Bisulphite 60–62%	ton	21	0	0	to	23	0	0
Chlorate	lb.	0	0	3½	to	0	0	4
Caustic, 70%	ton	20	10	0	to	21	0	0
Caustic, 76%	ton	21	10	0	to	22	10	0
Hydrosulphite, powder, 85%	lb.	0	1	9	to	0	2	0
Hyposulphite, commercial	ton	12	0	0	to	12	10	0
Nitrite, 96–98%	ton	29	10	0	to	30	0	0
Phosphate, crystal	ton	16	10	0	to	17	0	0
Perborate	lb.	0	0	11	to	0	1	0
Prussiate	lb.	0	0	11½	to	0	1	0
Sulphide, crystals	ton	12	0	0	to	12	10	0
Sulphide, solid, 60–62%	ton	20	10	0	to	22	10	0
Sulphite, cryst.	ton	12	10	0	to	13	0	0
Strontium carbonate	ton	55	0	0	to	60	0	0
Strontium Nitrate	ton	43	0	0	to	45	0	0
Strontium Sulphate, white	ton	6	10	0	to	7	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Sulphur, Flowers	ton	11	0	0	to	12	0	0
Roll	ton	11	0	0	to	12	0	0

	Per	£	s.	d.		£	s.	d.
Tartar emetic	lb.	0	1	4	to	0	1	5
Theobromine	lb.	0	12	6	to	0	13	0
Tin perchloride, 33%	lb.	0	1	2	to	0	1	4
Perchloride, solid	lb.	0	1	5	to	0	1	7
Protochloride (tin crystals)	lb.	0	1	5	to	0	1	6
Zinc chloride 102° Tw.	ton	21	0	0	to	22	10	0
Chloride, solid, 96–98%	ton	25	0	0	to	30	0	0
Oxide, 99%	ton	37	0	0	to	38	0	0
Dust, 90%	ton	45	0	0	to	47	10	0
Sulphate	ton	16	10	0	to	17	10	0

Coal Tar Intermediates, &c.

Alphanaphthol, crude	lb.	0	2	3	to	0	2	6
Alphanaphthol, refined	lb.	0	3	0	to	0	3	3
Alphanaphthylamine	lb.	0	2	0	to	0	2	1
Aniline oil, drums extra	lb.	0	0	10	to	0	0	11
Aniline salts	lb.	0	0	11	to	0	1	0
Anthracene, 40–50%	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine)	lb.	0	3	6	to	0	4	0
Benzidine, base	lb.	0	5	0	to	0	5	3
Benzidine, sulphate	lb.	0	5	0	to	0	5	3
Benzoic acid	lb.	0	2	0	to	0	2	3
Benzoate of soda	lb.	0	2	0	to	0	2	3
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol benzoate	lb.	0	5	0	to	0	5	3
Betanaphthol	lb.	0	1	4	to	0	1	4½
Betanaphthylamine, technical	lb.	0	5	0	to	0	5	6
Croceine Acid, 100% basis	lb.	0	3	6	to	0	3	9
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	2	9	to	0	3	0
Dinitrobenzol	lb.	0	1	3	to	0	1	4
Dinitrochlorbenzol	lb.	0	0	11	to	0	1	0
Dinitronaphthalene	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	5	to	0	1	6
Dinitrophenol	lb.	0	1	9	to	0	2	0
Dimethylaniline	lb.	0	2	6	to	0	2	9
Diphenylamine	lb.	0	4	3	to	0	4	6
H-Acid	lb.	0	6	0	to	0	6	3
Metaphenylenediamine	lb.	0	4	9	to	0	5	3
Monochlorbenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	6	0	to	0	6	6½
Metatoluylenediamine	lb.	0	4	6	to	0	4	9
Monosulphonic Acid (2.7)	lb.	0	5	6	to	0	6	0
Naphthionic acid, crude	lb.	0	2	9	to	0	3	0
Naphthionate of Soda	lb.	0	3	0	to	0	3	3
Naphthylamin-di-sulphonic-acid	lb.	0	4	0	to	0	4	3
Neville Winther Acid	lb.	0	7	9	to	0	8	0
Nitrobenzol	lb.	0	0	9	to	0	0	9½
Nitronaphthalene	lb.	0	1	2	to	0	1	3
Nitrotoluol	lb.	0	1	0	to	0	1	2
Orthoamidophenol, base	lb.	0	12	0	to	0	12	6
Orthodichlorbenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	1	6	to	0	1	9
Orthonitrotoluol	lb.	0	0	8	to	0	0	10
Para-amidophenol, base	lb.	0	9	0	to	0	9	6
Para-amidophenol, hydrochlor	lb.	0	8	6	to	0	9	0
Paradichlorbenzol	lb.	0	0	6	to	0	0	7
Paranitraniline	lb.	0	3	6	to	0	3	9
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	5	0	to	0	5	3
Paraphenylenediamine, distilled	lb.	0	10	6	to	0	10	9
Paratoluidine	lb.	0	6	0	to	0	6	6
Phthalic anhydride	lb.	0	2	9	to	0	3	0
Resorcin, technical	lb.	0	4	6	to	0	5	0
Resorcin, pure	lb.	0	6	3	to	0	6	6
Salol	lb.	0	2	0	to	0	2	3
Sulphanilic acid, crude	lb.	0	1	0	to	0	1	1
Tolidine, base	lb.	0	6	6	to	0	7	0
Tolidine, mixture	lb.	0	2	6	to	0	2	9

British Cast-Iron Research

A CIRCULAR issued by the British Cast Iron Research Association, and dealing with the progress of research work in hand, states that it has been decided to commence the first joint research with the Refractories Research Association on ganisters for cupola repairs and hearth linings. Arrangements are well in hand with the work. With reference to cast iron moulds for the glass bottle trade, the Association are about to carry out an investigation in these moulds as it is considered it will open out a new avenue of trade for the cast iron industry.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

GLASGOW, NOVEMBER 8, 1922.

BUSINESS during the past week was quiet and there is nothing of importance to record, with the exception of a reduction of ¼d. per lb. in makers' prices for bichromate of potash, and ½d. per lb. for bichromate of soda.

Industrial Chemicals

ACETONE.—Price still advancing and spot parcels very scarce. About £130 per ton.

ACID ACETIC.—Glacial 98/100 %, £60 to £65 per ton; 80% technical, £40 to £42 per ton; 80% pure, £44 to £45 per ton.

ACID BORACIC.—Unchanged, crystal or granulated, £60 per ton; powdered, £62 per ton.

ACID CARBOLIC.—Ice crystals in good demand. Price 7d. per lb.

ACID CITRIC.—Moderate inquiry for export. Quoted 1s. 9d. per lb. f.o.b. U.K.

ACID HYDROCHLORIC.—Makers' price unchanged, 6s. 6d. per carboy, ex works.

ACID NITRIC.—80°, £25 10s. per ton; 84° £27 10s. per ton.

ACID OXALIC.—Offered at 7½d. per lb. delivered.

ACID SULPHURIC.—Price unchanged; 144°, £4 per ton; 168°, £7 5s. per ton; dearsenicated, £1 per ton more.

ACID TARTARIC.—Offered at 1s. 2½d. per lb. ex wharf.

ALUM CHROME (CRYSTALS).—Quoted £24 to £27 per ton, according to quality.

ALUM LUMP POTASH.—Quoted, £13 per ton, ex store, spot delivery.

AMMONIA, ANHYDROUS.—In little demand, 1s. 7d. to 1s. 8d. per lb. ex works.

AMMONIA CARBONATE.—Lump 4d. per lb.; ground 4¼d. per lb. delivered.

AMMONIA MURIATE.—Grey galvanisers quality, £33 to £34 per ton, ex works; fine white crystals £26 10s. per ton, c.i.f. U.K.

AMMONIA SULPHATE.—25¼% £15 per ton; 25¾% neutral, £16 3s. per ton, ex works, November-December.

ARSENIC, WHITE POWDERED.—Very scarce. Price about £53 per ton, ex quay.

BARIUM, CARBONATE, 98/100%.—Offered from Continent at £13 10s. per ton, c.i.f. U.K.

BARIUM CHLORIDE.—About £19 10s. per ton.

BARYTES, FINEST WHITE.—£5 5s. per ton, ex works.

BLEACHING POWDER.—English material unchanged at £12 15s. per ton, ex station.

BORAX.—Crystal or granulated, £29 per ton; powdered, £30 per ton, ex station.

CALCIUM CHLORIDE.—English make £6 per ton ex quay. Continental offered at £4 per ton. c.i.f. U.K.

COPPER SULPHATE.—In little demand about £26 10s. per ton.

DEXTRINE.—Fine Dutch potato £20 per ton, c.i.f. U.K.

FORMALDEHYDE, 40%.—Supplies scarce for spot delivery. About £76 to £77 per ton.

GLAUBER SALTS.—Fine white crystals, £4 10s. per ton, ex store. Offered at £3 15s. c.i.f. U.K.

GLYCERIN.—Pure 1260 S.G., £82 10s. per ton, ex store.

LEAD.—Red, £37 15s. per ton; white, £50 15s. per ton ex station, 5-ton lots. Continental red lead at £34 per ton spot.

MAGNESITE.—Ground calcined, £10 per ton, ex station; coarser quality £7 per ton, ex store.

MAGNESIUM CHLORIDE.—Spot lots at £5 10s. per ton, ex store. Offered for forward delivery at £3 15s. per ton, c.i.f. U.K.

MAGNESIUM SULPHATE (EPSOM SALTS).—Commercial, £7 5s. per ton; B.P. quality, £9 per ton.

NAPHTHALENE.—Sublimed, £16 per ton, ex works.

POTASSIUM BICHROMATE.—Price reduced to 6d. per lb. delivered.

POTASSIUM CARBONATE, 90/92%.—Inclined to be dearer; £28 5s. per ton, ex store.

POTASSIUM CAUSTIC, 88/92%.—Spot lots at £29 10s. per ton, ex store.

POTASSIUM CHLORATE.—Price about 4¼d. per lb.

POTASSIUM NITRATE (SALTPETRE).—Spot parcels, £31 10s. per ton, ex store. In little demand.

POTASSIUM PERMANGANATE.—Quoted 8d. per lb.

POTASSIUM PRUSSIATE, YELLOW.—Moderate inquiry. Offered at 1s. 6d. per lb., delivered.

POTASSIUM SULPHATE, 90%.—Quoted £13 10s. per ton, c.i.f. U.K. port.

SODIUM ACETATE.—Fair inquiry; £23 to £24 per ton, ex station.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay; m.w. quality £1 per ton less.

SODIUM BICHROMATE.—Price reduced to 4½d. per lb., delivered.

SODIUM CARBONATE.—Soda crystals, £5 10s. to £5 15s. per ton, ex quay or station; alkali, 58%, £9 2s. 6d. per ton, ex quay or station.

SODIUM CAUSTIC.—76 77%, £23 5s. per ton; 70/72%, £21 5s. per ton; 60/62%, £20 5s. per ton; 98/99% powdered, £26 15s. to £27 15s. per ton, ex station; bottoms, £11 per ton, ex store.

SODIUM HYPOSULPHITE.—Commercial quality, £11 10s. to £11 15s. per ton; pea crystals, £17 10s. per ton, ex station.

SODIUM NITRATE, 96/98%.—Quoted £12 5s. per ton, f.o.r. works.

SODIUM PRUSSIATE, YELLOW.—Spot lots scarce. Price about 11½d. per lb., delivered.

SODIUM SILICATE, 140°.—English make £12 5s. per ton, ex station.

SODIUM SULPHATE (Saltcake 95%).—Price unchanged, £4 per ton, delivered.

SODIUM SULPHIDE, 60/62%.—Continental make £15 per ton, c.i.f., U.K.

SULPHUR.—Government surplus stocks of Sicilian thirds £3 10s. to £3 15s., ex depot; flowers, £12; roll, £11; rock, £10; ground, £10 per ton. Prices nominal, little demand.

TIN CRYSTALS.—Unchanged at 1s. 2d. per lb.

ZINC SULPHATE.—Offered at £15 10s. per ton, ex station.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ALPHANAPHTHOL.—Home inquiry. Price quoted, 2s. 8¾d. per lb. delivered.

BENZIDINE BASE.—Good demand for export. Price quoted 6s. 6d. per lb., 100% basis.

BETANAPHTHOL.—In good demand. Price 1s. 2d. per lb., delivered

BETA NAPHTHYLAMINE.—Home inquiry. Price quoted, 4s. 9d. per lb., delivered.

DIMETHYLANILINE.—Price remains firm at about 2s. 6d. per lb., delivered, in returnable drums.

ETHYL BENZYL ANILINE.—Export inquiry. Price quoted, 8s. per lb., f.o.b., packages included.

"H" ACID.—Good export inquiry. Price quoted, 5s. 9d. per lb., 100% basis, f.o.b.

NAPHTHIONATE OF SODA.—Supplies are offered at 2s. 8½d. to 2s. 10d. per lb., on 100% basis.

ORTHO AMIDO PHENOL BASE.—Home inquiry. Price quoted, 11s. 6d. per lb., delivered.

PHTHALIC ANHYDRIDE.—Small demand. Price quoted, 2s. 6d. per lb., delivered.

Paint and Varnish Technology

AT a meeting of the provisional council of the proposed Institute of Paint and Varnish Technologists, the following appointments were made:—*Chairman:* S. K. Thornley. *Vice-Chairman:* J. Newton Friend. *Hon. Treasurer:* A. Seymour Jennings. FINANCE COMMITTEE: C. A. Klein, W. J. Palmer and A. Seymour Jennings. *Incorporation Committee:* J. Cruickshank Smith; H. H. Morgan and S. K. Thornley. *Joint Hon. Secretaries:* H. D. Bradford, H. A. Carwood.

The Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, November 9, 1922.

Apart from the slight easing off in inquiries, due probably more than anything else to the political situation, there have been no striking changes this week in the position of the chemical market here. There is a continued steady demand from some of the chief chemical-consuming industries, but short-time working in the Lancashire cotton trade is a factor which is making its influence felt on the volume of business in chemicals.

Continental trade is not making very much headway, though Colonial shipments have been maintained at their recent level, and a number of contracts for delivery over next year have been booked.

In one or two lines poor supplies for spot or near delivery are forcing prices up—arsenic is perhaps the outstanding example—but on the whole these increases have been counterbalanced by slight reductions in a few other lines.

Heavy Chemicals

Caustic soda is rather quieter for the home trade, although the Colonies are still taking fair supplies; home delivery prices are firm at £20 5s. per ton for 70 per cent. strength and £22 5s. for 76 per cent. Bleaching powder is in quietly steady demand for home and export at £12 to £12 10s. per ton, in softwood casks. The demand for soda crystals has improved a little although the price is unchanged at £5 12s. per ton delivered. Sodium sulphide is quiet at £17 10s. for 60–65 per cent. concentrated and £11 per ton for crystals. Saltcake is firm and in moderate inquiry at £4 per ton. Ammonia alkali is still quiet though firm at £7 17s. 6d. to £8 per ton for 58 per cent. material, in bags and delivered to home users. Bicarbonate of soda is steady at £10 10s. per ton, in 2-cwt. bags, carriage paid. Hyposulphite of soda is steady and in fair demand at £18 10s. for photographic crystals and £10 10s. per ton for commercial. Glauber salts meet with rather a better inquiry at £4 10s. per ton. Prussiate of soda is perhaps a shade quieter at 11d. per lb. for spot, and fractionally lower rates for forward delivery. Nitrite of soda is firm and in steady demand at £28 per ton, with supplies of foreign said to be available at slightly lower prices. Phosphate of soda is quiet and easier at about £15 per ton. Chlorate of soda is unchanged in price at 2¾d. to 3d. per lb., plentiful supplies being on offer. A further cut has been made in the contract price of bichromate of soda, which is now 4½d. per lb., delivered. Acetate of soda is quiet but firm at about £23 per ton.

Caustic soda is still in good demand at about £28 10s. per ton for 88–90 per cent. strength. Carbonate of potash meets with an improved inquiry at £29 per ton for 96–98 per cent. material. Bichromate of potash keeps steady at 6d. per lb. A steady volume of business is being done in yellow prussiate of potash and price is firm at 1s. 6d. per lb.; with red at about 4s. 3d. Chlorate of potash is unchanged at 3¾d. to 4d. Permanganate of potash maintains a healthier tone at 7½d. per lb.

Sulphate of copper is still very quiet both for home and export, though quotations are unchanged at £26 to £27 per ton Arsenic is exceedingly scarce for spot delivery, white powdered Cornish now fetching up to £53 per ton Commercial Epsom salts are easier at £5 15s. to £6 per ton. Acetate of lime is scarce on spot at £15 for grey, and £8 5s. per ton for brown. Nitrate of lead is firmly maintained at £43 per ton, but not much business is passing. White sugar of lead is quiet but firm at £38 per ton and brown £34. Ammonia muriate is easier at about £34 for grey and £38 per ton for white. Lump alum is quiet but without change in price at £13 per ton. Formaldehyde is now quoted at about £72 per ton.

Acids and Tar Products

Tartaric and citric acids are quiet sections and prices for both are lower; tartaric is now quoted at 1s. 2½d. and citric at 1s. 10d. per lb. for B.P. quality. Acetic acid finds a ready market and prices are firmly maintained, glacial being quoted at £65, and 80 per cent. technical at £40 per ton. Oxalic acid is quiet but steady at 7d. per lb. Crystallised boracic acid is without alteration at £60 per ton.

Pitch continues in good demand for shipment at about £5 5s. per ton, f.o.b., Manchester. Carbolic acid crystals are quiet at 6½d. to 6¾d. per lb. Crude carbolic acid is firm at 2s. to 2s. 3d. per gallon for 60 per cent. material. Benzole is on the easy side at about 1s. 10d. per gallon. Solvent naphtha is not too active though the price is maintained at 1s. 10d. per gallon for 90–160. Creosote oil also is rather quiet at 6¼d. per gallon. Naphthalenes are well held at up to £7 per ton for crude, £17 for flake, and £15 per ton for crystals.

Santiago Nitrate Co.'s Meeting

Prospective German Demand for Sodium Nitrate

Presiding on Tuesday at the twenty-third annual meeting of the Santiago Nitrate Co., Ltd., held at 10 and 11, Lime Street, London, Mr. Edward Eyre referred to his statement last year that the nitrate industry was passing through a critical period. He felt he could now state that that condition of things had passed, and that, as far as the consuming markets were concerned, we were, with the exception of Germany, back to practically normal times. Notwithstanding her great production of synthetic nitrogen, Germany needed Chilean nitrate of soda, and was a possible consumer of a large quantity in the coming season; altogether the outlook was promising for a good demand for their unrivalled fertiliser.

Control of the Industry

Continuing, Mr. Eyre said he had emphasised last year that the then healthy financial position of their company was due to the fact that the industry was controlled by its association of producers. While they have heard complaints that some measures taken by the association's board of directors were not entirely advisable, he had no hesitation in assuring shareholders that it was decidedly in the interest of the industry that it should continue under its present control. At the same time care must be taken that no member of the association be left with a well-founded grievance as to the quota allotment, or that as in their own case, when that grievance was well founded, that they should be asked to consent to its continuance.

There was, the chairman continued, a marked difference of opinion between the Chilean nitrate committee and the board of directors in Valparaiso last March as to the figure at which prices should be fixed for the ensuing year. The London committee suggested figures that would have left an average price of about 10s. per Spanish quintal, but the directors of the Valparaiso board, in view of the large coast stocks, perhaps influenced by the intense desire in Chile that export should reach the largest possible amount, decided on figures that would leave an average price of, say, 9s. per Spanish quintal. He was supported by the best expert advice in Europe and by the opinion of the leading American importers of nitrate that both markets would have readily paid this difference without diminishing by one ton the quantity of nitrate handled.

As, however, their company had sold its quota, the unnecessarily low price fixed by the association did not on this occasion affect them quite so unfavourably. However, in view of what was known as form C, which purported to lay down stipulations that must bind the associates and which might for their legality need statutory confirmation, it might happen if the board of directors fixed an unremunerative price that an associate might be constrained to fill form C, with a proviso that the quantity of nitrate tendered was subject to its being sold at not below a determined figure, or, to put this another way, no associate should be obliged to manufacture and sell his nitrate at a price that did not suit him. To what extent an associate's refusal to sell his output at the association's price should deprive him of the right to sell his quota would seem open to question.

In conclusion, Mr. Eyre expressed the opinion that their company had many years' life ahead of it. Their grounds were rich in iodine and potash, for which latter they received a premium. Their plant had been overhauled and was in good condition.

Royal Society Medallists

The following awards have been made by the President and Council of the Royal Society: The Copley Medal to Sir Ernest Rutherford for his researches in radio-activity and atomic structure; the Davy Medal to Professor J. F. Thorpe for his researches in synthetic organic chemistry; the Hughes Medal to Dr. F. W. Aston for his discovery of isotopes of a large number of the elements by the method of positive rays.

Company News

SANTA CATALINA NITRATE CO.—A further dividend of 5 per cent., less tax, is payable on November 23, making a total of 10 per cent. for the year to June 30 last.

ZINC CORPORATION.—A dividend of 2s. per share on the preference shares, being the first half of the fixed preferential dividend of 20 per cent. for the year 1922 is payable on January 2, less tax at 5s. 6d.

BRUNNER, MOND AND CO., LTD.—The directors announce an interim dividend at the rate of 7½ per cent. per annum, less tax, payable on December 12. A year ago the interim dividend was at the rate of 5 per cent., less tax.

WILKIE AND SOAMES, LTD.—After payment of a preference dividend the accounts for the year to June 30 last show a balance at credit of profit and loss of £1,872, which it is proposed to carry forward. Last year 15 per cent. was paid on the ordinary shares and £20,312 was carried forward.

SANTIAGO NITRATE CO., LTD.—Speaking on Tuesday at the annual meeting of the company, Mr. E. Eyre said there was a net profit for the year of £12,333, from which they were again paying a dividend of 7½ per cent., less tax. The directors saw no reason why a similar dividend should not be forthcoming next year. A report of the meeting appears on page 688.

LANGDALE'S CHEMICAL MANURE CO.—The accounts for the year to September 30 last show that the debit balance brought in was £27,037; after deducting profit for the past year and £9,695 recovered from Inland Revenue authorities, £11,445, there remains a debit balance to be carried forward of £15,592. Trading conditions during the year showed some improvement, though competition from near continental makers continued very severe, leaving home manufacturers little or no profit. There has been some revival of foreign trade. The annual meeting will be held at Half-Moon Chambers, Bigg Street, Newcastle-upon-Tyne, on November 17, at 11.30 a.m.

COAL, PEAT AND OIL, LTD.—At an extraordinary general meeting held on November 3, resolutions placing the company in voluntary liquidation and appointing Lieut.-Col. J. Grimwood as liquidator were carried after a short discussion. Mr. W. E. Taylor, who presided, said the step had been necessitated by the fact that the company had had no income for several months, and was unable to meet the pressing claims of its creditors. To prevent an unfair dispersal of its assets there was no alternative to voluntary liquidation. Their selling agents, while maintaining that the company's process was very valuable, and that they would be able to sell the whole of its products, had unfortunately made practically no sales, giving as the reason the depressed state of trade. The directors, however, had by no means lost faith in the company's "Decolouriser," and believed that there would be a demand for it when properly placed on the market. It was possible that a new company might be formed, which would make an offer to purchase the assets and patents from the liquidator.

BELL'S UNITED ASBESTOS CO., LTD.—The company is offering to its debenture holders and shareholders £100,000 5½ per cent. first debentures of £100 each at 97 per cent., payable 10 per cent. on application, 40 per cent. on allotment, 25 per cent. on January 1 next, and 22 per cent. on March 1. Registered holders of Bell's United 5 per cent. debentures have the right of exchanging each £100 for £100 of the debentures now offered, together with a cash payment on January 1 next of £3 per cent., and, in addition, £2 10s. per cent. (less income-tax), being the half-year's 5 per cent. interest due on that date. The directors state that the issue is corollary to arrangements for the amalgamation of the "Poilite" (Asbestos-Cement) section of the company's business with the British Everite and Asbestilite Works, Ltd., of Manchester, which carries on a similar business. The new company will be known as Bell's Poilite and Everite Co., Ltd., and the combined business will be under the same management as heretofore, except that Bell's United Asbestos Co. will hold a controlling interest.

LASTENIA NITRATE CO.—Incorporated under the laws of the Republic of Chile, the company, which has a paid-up capital of £3,000,000, is inviting offers for £1,000,000 six-and-a-half per cent. first mortgage debenture stock at 95½. The stock is redeemable by purchase at not exceeding par, or by drawings at par, by the application of an annual sinking fund of £65,000 per annum, the first payment to be provided by April 1, 1925. Any stock not previously redeemed will be repayable at par on December 1, 1940. The amount of the sinking fund is, in the event of the company selling for delivery in any one year more than six million quintals of nitrate of 46 kilos each, produced from the grounds specifically mortgaged, to be increased in the next year by an amount equal to one shilling for each quintal sold in excess of that amount. The company may at its option redeem all or any of the outstanding stock at 102 on any interest date on giving six months' notice at any time after December 1, 1930. The subscription list was opened on Thursday and will be closed on or before November 13.

"How to Form a Company"

MR. HERBERT W. JORDAN'S excellent little book, *How to Form a Company*. (London: Jordan and Sons, Ltd. 1s. 6d.) has now gone to a fifteenth edition, in which a slight rearrangement of the text has been effected. The book indicates briefly, but sufficiently, the advantages that incorporation under the Companies Acts affords, and explains the machinery by which incorporation is effected. Consideration is given to the forms that are required to be filed, and the provisions of the Memorandum and Articles of Association and of the prospectus are sufficiently explained to make their purpose and scope clear to the reader. The book deals mainly with the formation of public companies, but the distinction between such companies and a private company is shown and the privileges attaching to the latter class are set out.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OR FIRM OR AGENT.	MATERIAL.	REF. NO.
Australia.....	Fine and heavy chemicals and chemical products.	494
Canada	Dry white zinc, lithopone, white lead, etc.	496
Riga	Fertilisers, oils, paints and colours	508
Barcelona	Chemicals for bleaching, dyeing, etc.	—
Switzerland ..	Chemicals and drugs.	—
United States of America ..	Caustic soda and Fuller's earth	—

Oxidation of Incidental Minerals Found in Clays

THE purpose of an investigation being conducted by the U.S.A. Bureau of Mines at the ceramic experimental station, Columbus, Ohio, is to obtain fundamental data concerning the action of the incidental minerals found in clays during firing, and, later, to make application of the information so obtained to explain certain phenomena that occur with the clay body. It is hoped to throw light on the physical, chemical and thermal changes taking place in clay bodies between a temperature of 400° and 800°, the so-called oxidation period. The work is a part of the industrial kiln investigation conducted in co-operation with the four heavy clay products associations—Common Brick, Face Brick, Paving Brick, and Hollow Building Tile Associations. Data have been obtained on the dissociation and oxidation of sulphides found in clays. The work, it is hoped, will afford information on the so-called "scum," developed on some red bricks. Data for time, temperature, and atmosphere curves have been worked out in reference to the oxidation of the carbonaceous matter found in clays. Clays have been distilled and the products of distillation studied. Application of the data to a study of the so-called "bloating" of clay products is being made.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

HENSHAW, Mr. J. L., Peel Villa, Mount Fields, Shrewsbury, chemist. (C.C., 11/11/22.) £20 2s. 8d. October 2.

JUDD, Mr. R. D., The Pharmacy, Wheathampstead, chemist. (C.C., 11/11/22.) £10 4s. 7d. October 2.

NORRIS BROS., LTD., chemical manufacturers. (C.C., 11/11/22.) £28 2s. 6d. October 3.

THORNE, Mr. W. R., 3, Pelham Street, South Kensington, chemist. (C.C., 11/11/22.) £20 4s. 9d. October 3.

WARDLE, Mr. H., 2, Gloucester Terrace, Southfields, chemist. (C.C., 11/11/22.) £28 0s. 2d. October 2.

WOODCROFT MANUFACTURING CO., LTD., Dickens Street, Queen's Road, Manchester, manufacturing chemists. (C.C., 11/11/22.) £16 14s. 10d. September 25.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

BASS AND WILFORD, LTD., Nottingham, chemists. (M., 11/11/22.) Registered October 24, £300 debentures; general charge. *£200. December 12, 1921.

BRIGHT AND MINNS, LTD., Newport (I. of W.), dyers, etc. (M., 11/11/22.) Registered October 26, £500 mortgage, to Mrs. K. E. Minns, Caversham, White Pit Lane, Newport; charged on 70, Fawcett Road, Southsea. *£600. April 12, 1922.

GENERAL RENOVATING CO., LTD., Manchester, dyers, etc. (M., 11/11/22.) Registered October 26, £3,000 debentures (filed under sect. 93 (3) of the Companies (Consolidation) Act 1908), present issue, £2,600; general charge. *——. March 6, 1922.

GODDON AND CO., LTD., London, W.C., manufacturing chemists. (M., 11/11/22.) Registered October 20, £1,300 debentures, to J. Dodds, Lancaster Gate Hotel, Lancaster Gate, W.; general charge.

HAIGH DYEING CO. (1920) LTD. (M., 11/11/22.) Registered October 21, charge to Bank; charged on Haigh Dyeworks, Brock Mill Lane, Haigh, and two plots of land adjoining used as reservoirs.

ORMSIDE SILICA WORKS, LTD., Redhill (Surrey). (M., 11/11/22.) Registered October 27, £2,500 debentures; general charge (subject to existing charges not ex. £5,000 in all.)

ROWE (WALTER), LTD., Leicester, chemists. (M., 11/11/22.) Registered October 24, mortgage securing £850 and further advances, to Mrs. G. A. Hill, Cedars, Aylestone Road, Leicester; charged on Eldon House, 97, London Road, Leicester, with appurtenances. *Nil. December 19, 1921.

TATE (A.), LTD., London, S.W., chemists. (M., 11/11/22.) Registered October 26, £6,000 debentures; general charge. *Nil. May 30, 1922.

London Gazette

Notice of Intended Dividend

STOPFORTH, Richard, 10, Eaton Street, Liverpool, lately 71, Vauxhall Road, Liverpool, wholesale druggist. Last day for receiving proofs, November 27. Trustee, P. S Booth, 2, Bixteth Street, Liverpool.

New Companies Registered

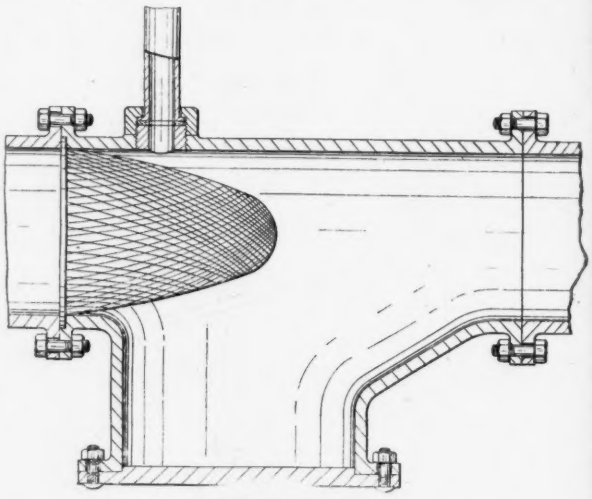
AMDIC HARDWARE SUPPLIES, LTD. Phœnix Works, Battens Yard, High Street, Peckham, S.E. Manufacturers of and dealers in chemicals, oils, etc. Nominal capital, £70,000 in 60,000 preference shares of £1 each and 200,000 deferred shares of 1s. each.

ECONOMIC SOAP CO., LTD., 27, Martin Lane, Cannon Street, London. Chemists, druggists, drysalters, soap manufacturers. Nominal capital, £1,000 in £1 shares.

NAILSTONE COLLIERY CO., LTD. Manufacturers of and dealers in chemicals and manures; oil and chemical distillers, etc. Nominal capital, £60,000 in £1 shares. A director: H. A. Purdon, 10, Lower Grosvenor Place, S.W.1.

A New Strainer for Liquids

WHILE not altogether new in principle, a strainer for liquids which has been patented by the Patent Hygienic Strainer Co., of 153, Fleet Street, London, E.C., has obvious applications in chemical industry. The appliance is made of copper and silver-plated in order to obviate the risk of verdigris and chemical action, and a metal flange or frame which grips the strainer proper, adds materially to its life. In use the conical or forward end of the strainer faces the flow of liquid, so that clogging of the filter by solid matter in suspension in the liquid is obviated. The device is made in a large variety of sizes, the smallest being 1 in. in diameter at the wide end. The smaller models are designed for use in laboratories



The Hygienic Filter

while the larger ones, which can be made in any size to order can be inserted in any pipe-line in conjunction with the sediment trap and cleaning arrangement shown in our illustration. The liquid to be filtered comes into contact with the filter from the right. Some of the solid matter sinks down the inclined portion of the trap, as indicated by the dotted lines, but most of it is thrown down from the narrow end of the filter. It is, of course, necessary periodically to remove the solids from the trap by means of the removable plate at the bottom, while a blast of steam operated through the cock placed immediately above the filter serves to remove any particles that may be lodged on the upper surface. It is claimed that the use of this device does not interfere with the flow of the liquid, and although complete filtration is not effected, all but the finest particles are removed.